Spacecraft Clock Correlation Based on RDD Method

Test Case No.: ANA-2020B

Test Configuration: See Appendix G

Test Support: Telemetry simulator packGen to simulate housekeeping telemetry, simulator to generate RCTD (Return Channel Time Delay) measurements, FDF ranging data predictor, file to contain FDF predicts, tool to browse file containing RCTD data. Telemetry mnemonics with values that will generate a clock error of 0.0 milliseconds. Telemetry mnemonics with values that will generate an error of 100 milliseconds.

Test Case Description: This test is designed to calculate the s/c clock error by use of the RDD algorithm. This value is given by the difference between the s/c time stamp and the ground receipt time. Input data comes from simulated housekeeping data, RCTD simulated measurements and FDF predicts of the range stored in a file. Two cases will be considered. The first case will be for zero clock error. The second case will be for a clock error of 100 milliseconds.

Following sign on the FDF predicts are generated using the tool FaCcFdfRangeDriver and stored in a file. The events display window is brought up, the housekeeping telemetry generator and the RCTD measurement generator are brought on line in such a way as to keep their data streams synchronous TBS. The FDF predicts file is read and s/c error time is calculated. An event message is displayed once a minute during simulated s/c contact giving the error of the s/c clock. For the first part of the test the clock error will be zero. Snaps of some of the event messages TBS, when this is supposed to occur, will be taken. At the end of s/c contact a final event message is generated giving the average clock bias for the entire contact. A snap is taken for comparison with the report to be generated. Finally an ascii report giving the average clock bias is generated. The RCTD messages from this contact are stored for the next contact. These messages will be verified by comparing the starting values with values in the file that can be browsed with the tool FaCcClockFileDriver. The values of the clock bias for the first run should all be zero and will be set up that way for the input data. The telemetry and RCTD simulators are stopped and set up to run a new set of data that will yield a clock error of a 100 milliseconds. The simulators are restarted in a manner so they run synchronously which is TBD. The same FDF file as in the first run will be used in this run. The inputs for this run will be set up so that clock bias of 100 milliseconds is calculated. Snaps at TBS times will be taken to verify this.

Success Criteria: This test will be considered successful when is demonstrated that the s/c clock error can be calculated by use of the RDD algorithm. That predicted s/c data and RCTD measurements are used as inputs to the RDD algorithm. That the predicted s/c range data will be calculated by interpolating or extrapolating to the nearest millisecond. Success will be verified when the average clock bias is notified once per minute. It is successful when the capability to control the process can be demonstrated. This test is successful when it is demonstrated that it can collect a maximum of 99 data samples from one full RCTD message. The test is successful when it is shown that a clock correlation report is generated for each real time pass during which clock correlation is performed and that the report contains a.) The start and stop times of the pass during which the correlation was performed b.)The s/c ID c.) The type of calculation used (RDD). It is successful when included in the clock correlation report are the results from the clock correlation calculation, and the s/c time associated with the results. Finally, the test will be successful when it shown that the clock correlation calculation has the capability to receive and process RCTD messages from the NCC. The test should be capable of generating a clock correlation bias of 0 seconds and a clock correlation time of 100 milliseconds. The RCTD messages that are stored for the next pass for both tests will be verified by comparison with starting data.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	Log onto a EOC workstation under one of the fostest accounts (fostest1, fostest2, fostest3, fostest4):	Username: ******** Password: ********	
2.	Open a terminal window.	The terminal area displays a blank desktop window area with an xterm window.	

3.	Bring up the FDF range predictor FaCcFdfRangeDriver. TBS	This will generate a days worth of FDF range predicts and write them to a file.	
4.	Initiate the Data Server, Real-Time Server and the User Station startup scripts. Reference Test Case #	The EOC is up and running and the User Station has a login window displayed. The environment pull-down menu shows the default setting Operational.	
5.	Click on "Tools" button.	The Tool Selection Dialog Box will appear on the screen.	
6.	Select Events Display from the Tool Selection Dialog Box.	The Event Display window will appear on the screen.	
7.	Connect to a real-time operational string, to accept Housekeeping data, by entering the following in the ECL directive line of the Control window: ECL>**STRING CONNECT STRING=100 CONFIG= MIRROR**	The following message will appear in the Event Display window: "Successfully connected to string 100".	
8.	Invoke the EDOS telemetry driver for the multicast of Housekeeping telemetry packets containting timing information and invoke the RCTD simulator containing Operational Messages-62 in such a way that the two simulators will be sychronized TBS.	Bring up packGen and the Return Channel Delay Time (RCDT) simulators.	
9.	The packets are decommutated. The parameter server and telemetry archiver are updated.		

10.	The RDD software receives parameters from the parameter server on a packet by packet basis. Take snapshots every TBS minutes at the user station by entering the following inside a terminal window: %: **snap**	View the events display window to see clock biases, which should be 0.0 every minute. The snaps are printed at the system printer. Collect the printouts for off-line analysis.	
11.	At the end of the run(LOS) an event message giving the average clock time is generated. Take a snap by entering the following in a user window: %: **snap**	Verify that this is 0.0.	
12.	At the end of a run (LOS) a report is generated.	Verify the clock correlation report contains a) The start and stop times of the pass during which the correlation was performed. b) The s/c ID c)The type of calculation used(RDD). The report shall also contain the average clock correlation value and the s/c time associated with results.	
13.	Bring down packGen and the RCTD message simulator TBS.	End of first run.	
14.	Browse the file containing the RCTD messages written at the end of the pass using the tool FaCcClockFileDriver.	The RCTD messages should agree with the starting values.	
15.	Connect to a real-time operational string, to accept Housekeeping data, by entering the following in the ECL directive line of the Control window: ECL>**STRING CONNECT STRING=100 CONFIG= MIRROR**	The following message will appear in the Event Display window: “Successfully connected to string 100”.	

16.	Restart Packgen and the RCTD message simulator in such a way that they will be running synchronously TBS.	Generate data in such a way that a clock error of 100 milliseconds will be obtained. The FDF range predicts file used in the first run will be used here also.	
17.	The packets are decommutated. The parameter server and telemetry archiver are updated.		
18.	The RDD software receives parameters from the parameter server on a packet by packet basis. Take snapshots every TBS minutes at the user station by entering the following inside a terminal window: %: **snap**	View the events display window to see clock biases, which should be 100 milliseconds every minute. The snaps are printed at the system printer. Collect the printouts for off-line analysis.	
19.	At the end of the run(LOS) an event message giving the average clock time is generated. Take a snap by entering the following in a user window: %: **snap**	Verify that this is 100 milliseconds.	
20.	At the end of the run (LOS) a report is generated.	Verify that 100 milliseconds is given as the average clock bias.	
21.	Bring down packGen and the RCTD message simulator TBS.		
22.	Log off.		
23.	End of test.		

Spacecraft Clock Correlation Based on USCCS Method

Test Case No.: ANA-2030B

Test Configuration: See Appendix G

Test Support: Telemetry simulator packGen to simulate housekeeping telemetry, NCC simulator to generate forward and return range zero set values and PN epoch TGT departure and arrival time pairs contained in operational message 66(OPM 66), tool to browse table containing constants used to calculate clock bias, S/C master oscillator frequency, bias, drift rate, frequency drift rate and the clock bias accuracy. Table load generator tool to look to in table created containing frequency drift rate, clock bias and accuracy of clock bias. Telemetry mnemonics with values that will generate a clock bias of 100 microseconds using the USSCS method. Appropriate constants for the method that will give the indicated value. Additionally mnemonics and constants that will yield a frequency of 4.00 MHZ for the Master Oscillator, an appropriate drift rate TBS, along with a table for uplink that contains an appropriate frequency drift rate TBS, an appropriate clock bias accuracy TBS and the clock bias. Some of the telemetry from NCC and telemetry simulators will be flagged as bad.

Test Case Description: This test is designed to verify the ability of the software to calculate the spacecraft clock bias using the USCCS method. It is also designed to verify that the S/C Master Oscillator frequency and drift rate can be calculated along with a table of values for uplink which contains the frequency drift rate, the clock bias and the accuracy of the clock bias. The USCCS method must be capable of filtering out the telemetry flagged as poor quality.

Following sign-on, the events display window is brought up, the housekeeping telemetry generator and NCC simulator are brought on line. The average S/C clock bias is calculated and an event message is displayed, a snap is taken for comparison with the report that is to be generated. The report contains the S/C ID, S/C time of report, start and stop times of the pass during which the correlation was made, an average clock bias, current clock frequency, bias drift rate and frequency drift rate. A table is created for uplink to TONS. The table contains the frequency drift rate, the clock bias and the accuracy of the clock bias. A report for this table is generated. The table can be browsed with the table load generator tool and its contents should match the table load generation report. The file containing the constants used in the calculations, may be examined with a tool. These values along with the values in telemetry and the Time Transfer Messages contained in OPM 66 are used to calculate the clock bias, S/C Master Oscillator frequency, the drift rate, the frequency drift rate, and accuracy of the clock bias.

Success Criteria: This test is considered successful when the USCCS method can filter out telemetry flagged as bad and calculate the clock bias of 100 Microseconds and an oscillator frequency of 4 MHz. It will be successful when it can calculate the drift rate given by the input data, a table for uplink to TONS containing the frequency drift rate, the clock bias, and the accuracy of the clock bias. It will be considered successful when a report is generated containing the S/C ID, the start and stop times of the pass during which the correlation was made, the results from clock correlation calculation, the S/C time, the S/C master oscillator frequency, a bias, and a drift rate along with the type of method used (USCCS).			
Step Id	**Action**	**Expected Result/Output**	**Pass/ Fail**
1.	Log onto a EOC workstation under one of the fostest accounts (fostest1, fostest2, fostest3, fostest4):	Username: ******** Password: ********	
2.	Open a terminal window.	The terminal area displays a blank desktop window.	
3.	Initiate the Data Server, Real-Time Server and the User Station startup scripts. Reference test case #	The EOC is up and running and the User Station has a login window displayed. The environment pull-down menu shows the default setting operational.	
4.	Click on “Tools” button.	The Tool Selection Dialog Box will appear on the screen.	
5.	Select Events Display from the Tool Selection Dialog Box.	The Event Display window will appear on the screen.	

6.	Connect to a real-time operational string, to accept Housekeeping data, by entering the following in the ECL directive line of the Control window: ECL>**STRING CONNECT STRING=100 CONFIG= MIRROR**	The following message will appear in the Event Display window: **"**Successfully connected to string 100".	
7.	Invoke the EDOS telemetry driver for the multicast of Housekeeping telemetry packets containg timing information and data flagged as poor quality. In a new terminal window, enter the following: %: **cd /fos/test/am1/scripts/setup** %: **source packGenEnvVars** %: **cd /fos/test/am1/bin/sun_sparc_5-5** %: **PackGEN** Enter tlm type: **am1-hk** At the packGen prompt enter the following: IP address = **225.2.7.00** Port Number = **20000** Number of packets to send: TBS Packet delay in milliseconds: **8000**	Bring up packGen. Let run one Master Cycle TBS.	

8.	Bring up the NCC simulator to send Operational messages 66. TBS		
9.	Send the OPM-66's to the calculation process. TBS		
10.	View the events display window to see the average clock correletion time calculated by the USCCS method. Take a snap. %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis. The value obtained should be 100 microseconds.	
11.	A report is then generated.	Verify that the report value for the clock bias matches the one displayed in the events display window. Verify that the Master oscillator frequency comes out around the value of 4 MHz. Verify the values of the bias drift rate TBS, frequency drift rate TBS, the start and stop times of the pass TBS, the S/C ID, and the type of calculation used was USCCS. Note: Beforehand knowledge of values in telemetry, OPM-66 and constants used in the calculation allow one to predict the results before the calculations are done.	
12.	Verify that a table is created for uplink to TONS. And a report is generated for this.	Using the tool, table load generator verify the report matches what is in the table and that what is in the table is correct. The table contains the frequency drift rate, the clock bias and the accuracy of the clock bias.	
13.	Bring the NCC simulator down. TBS		

14.	Stop the telemetry driver PackGen by entering CTRL-C in the telemetry driver window.		
15.	Log off		
16.	End of test.		

Special Processing Algorithms

Test Case No.: ANA-2040B

Test Configuration: See Appendix G

Test Support: Telemetry packet driver "packGen" supporting multiple APIDs, input mnemonics, output mnemonics, tool Reader Driver.

Test Case Description: This test is designed to verify the ability to take system supplied algorithms and curve fit parameters to a polynomial of order 9, to take the Fast Fourier transform of a set of parameters, to smooth or average N data points, to compute the Root Mean Square of series of parameters, to average a set of parameters in the telemetry archive, and to input data values from a data set to an algorithm. These algorithms are written in C or C++ and will be compiled and linked into a data object appropriate for dynamic linking on the target platform. Additionally, the test will take a user defined algorithm written in C code to average a set of numbers. The algorithm will be registered, the inputs and outputs defined and assigned to AM-1 mnemonics. The algorithm will then be executed.

Following sign-on, the Reader Driver is brought on line. The calculations are performed for the first part of the test. In the second part of the test, the telemetry simulator is brought on line, the User Algorithm displays are brought on line. The algorithm is registered on algorithm display page. The inputs and outputs are defined on the appropriate display pages and then assigned to the AM-1 mnemonics. Finally the user algorithm is executed.

Success Criteria: This test is considered successful when all the calculations performed by the system match hand calculated values.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	Log onto a EOC workstation under one of the fostest accounts (fostest1, fostest2, fostest3, fostest4):	Username: ******** Password: ********	
2.	Open a terminal window.	The terminal area displays a blank desktop window area with an xterm window.	

3.	Bring up Reader Driver. TBS		
4.	Curve fit the parameters in Table CONT-2040B column1 to a ninth order polynomial. TBD	Verify this is the correct polynomial by hand. TBD	
5.	Apply a Fast Fourier transform to the parameters Table CONT-2040B column 2. TBD	Verify the result by hand. TBD	
6.	Smooth the N specified data points in Table CONT-2040B column 3. TBD	Average the N data points by hand to verify the result. TBD	
7.	Compute the root mean square of the data points in Table CONT-2040B column 4. TBD	Compute the root mean square of the data points by hand to verify the result. TBD	
8.	Supply the above algorithms written in C or C++ and be compiled and linked into a data object appropriate for dynamic kinking on the target platform. TBD		
9.	Apply data smoothing to a set of data points in the telemetry archive. TBD	Verify the results by hand. TBD	

10.	Smooth 20 data points. TBD	Verify the result by hand.TBD.	
11.	Fast Fourier Transform the data in a data set. TBS.	Verify the results by hand.	
12.	Bring down the Reader Driver. TBD		
13.	Initiate the Data Server, Real Time Server and the User Station startup scripts. Reference test case #.	The EOC is up and running and the User Station has a login window displayed. The environment pull-down menu shows the default setting operational.	
14.	Click on the tools button.	The Tool Selection Dialog Box will appear on the screen.	
15.	Select Events Display from the Tool Selection Dialog Box.	The Event Display window will appear on the screen.	
16.	Connect to a real-time operational string, to accept Housekeeping Data, by entering the following in the ECL directive line of the Control window: E C L > **String Connect String=100 Config=Mirror**	The following message will appear in the Event Display window: "Successfully connected to string 100"	

17.	Invoke the EDOS telemetry driver for the multicast of Housekeeping telemetry packets for processing. In a new terminal window, enter the following: %: **cd /fos/test/am1/scripts/setup** %: **source packGenEnvVars** %: **cd /fos/test/am1/bin/sun_sparc_5-5** %: **pacGen** Enter tlm type:am1-hk At the packGen prompt enter the following: IP address = **225.2.7.00** Port number = **20000** Number of packets to send: TBS Packet Delay in milliseconds: **8000**	Bring up packGen.	
18.	Bring up the User Algorithm Display page. TBD	Display page appears.	
19.	Register an algorithm that averages numbers. TBD	This is in the form of a c source file with the path specified. TBD Display will show algorithm that is available.	
20.	Create 10 input variables on the input display page.	Display will show this.	
21.	Create 1 output variable on the output display page.	Display will show this.	

22.	Select the AM-1 S/C to get AM1 mnemonics. TBD	Display will show AM-1 mnemonics on input page.	
23.	Assign mnemonics to input values on input display page.	Display will show this.	
24.	Assign mnemonic to output value on output display page.	Display will show this.	
25.	Execute algorithm by clicking on OK twice.	Verify result with hand calculated result.	
26.	Bring down User Algorithm Process. TBD		
27.	Bring down packGen. Press Ctrl-C		
28.	Log off the user station(s).		
29.	End of test.		

Time Order Downlink Report Test Procedure

Test Case No: ANA-2060B

Test Configuration: See Appendix G

Test Support: None

Test Dependencies: Previously created Analysis Request; Previously archived telemetry: housekeeping, health & safety, and standby.

Test Case Description:

This test is designed to verify the ability to a generate and print a Time Order Downlink Report based on information selected from a combination of user interface and analysis tool options from a previously defined dataset.

The test begins with the initialization of the EOC to support off-line analysis processing. A previously created Analysis Request is retrieved to verify that request processing has been completed. A Time Order Downlink Report is generated from the previously created analysis request, with selected options including request name and start/stop time interval and desired parameters (parameter selection will include at least one EU conversion value and one raw value) . The Time Order Downlink Report is saved and submitted. The last portion of the test will reflect the ability to display the results of analysis requests in the form of graphs and tables.

Success Criteria:

Via off-line analysis, it is determined that the Time Order Downlink Report content matches dataset values, and report values match database definitions for a sample of the displayed parameters. Selected parameters supported by the associated telemetry format(s) are included in the report, along with associated raw or EU values. The report output matches the start/stop time specified in the Time Order Downlink Report request. All mnemonics resident on the report are displayed in the order in which they are sampled by the spacecraft. Attempting to request a report associated with data not residing in the archive, for a time period less than one second, results in an error message display and the report not generated. Output from analysis requests can be displayed in the form of graphs and tables.

Step Id	Action	Expected Result/Output	Pass/ Fail

1.	**Start the Data Server.** Reference Test Case SYS-2000B -- FOS Server Startup.	Data Server processes are running.	
2.	**Start the Real-Time Server.** Reference Test Case SYS-2000B -- FOS Server Startup.	Real-Time Server processes are running.	
3.	**Start the User Station.** Reference Test Case SYS-2010B -- User Station Startup and Authentication.	The FOT User Station is running and the Control window is displayed.	
4.	**Invoke the Event Display.** Click on 'Tools' from the Control window.	The Tools Dialog window is displayed.	
5.	Select 'Event_Display_Local' from the Control window tools menu. Click on the 'OK' button.	The Event Display is displayed on the FOT User Station.	
6.	**Invoke a previously saved Analysis Request** Select 'Tools' from the Control window.	The Tools Dialog window is displayed.	
7.	Select 'Analysis Request Builder'. Click on the 'OK' button.	The Analysis Request Builder is displayed.	
8.	Click on the File pull down menu Select 'Open'	The File Selection window is displayed.	

9.	Select ‘Myrequest1’ Click on ‘OK’ button	Analysis Request ‘Myrequest1’ is displayed. Verify the Request Status is complete.	
10.	**Print a Time Order Downlink Report** Select ‘Report Generator’ from the Control window tools menu.	The Report Generator window is displayed.	
11.	Click the On-Demand toggle button. Select Spacecraft type ‘AM1’. Select Report Category ‘ANA’. Select from Available Reports text area ‘Time Order Downlink Report’. Click ‘OK’ button.	The On-Demand Report Specification window is displayed.	
12.	Enter Start Time: **TBD**	Report Start Time is displayed.	
13.	Enter Stop Time: **TBD** (less than 1)	An error dialog box is displayed indicating the time selection is invalid.	
14.	Click the mouse on ‘Close’ button in the dialog box.	Dialog box will close.	
15.	Enter Start Time: **TBD**	Report Start Time is displayed.	

16.	Enter Stop Time: **TBD**	Report Stop Time is displayed.	
17.	Enter Data Set: **Myrequest1**	The Dataset to be used to create the report will be displayed along with all the mnemonics in that dataset.	
18.	Select parameters used in the report. Click on 'Filter' button.	The Selection Filter Window is displayed.	
19.	Select the Spacecraft type: '**AM1**'	The Instruments associated with AM1 the will be displayed in the Instrument text area.	
20.	Select '**CHD**' in the Instrument text area.	Sample Types associated with CDH are displayed in the Sample Type text area.	
21.	Select '**B**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_B is displayed in the Selected text area.	
22.	Select '**I**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_I is displayed in the Selected text area.	
23.	Select '**N**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_N is displayed in the Selected text area.	
24.	Select '**S**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_S is displayed in the Selected text area.	
25.	Select '**COM**' in the Instrument text area.	Sample Types associated with COM are displayed in the Sample Type text area.	

26.	Select '**B**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_COM_B is displayed in the Selected text area.	
27.	Select '**I**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_COM_I is displayed in the Selected text area.	
28.	Select '**P**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_COM_P is displayed in the Selected text area.	
29.	Select '**GNC**' in the Instrument text area.	Sample Types associated with GNC are displayed in the Sample Type text area.	
30.	Select '**B**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_GNC_B is displayed in the Selected text area.	
31.	Select '**S**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_GNC_S is displayed in the Selected text area.	
32.	Click on the 'OK' button.	The selected parameters will be displayed in the Selection Filter Area of the On-Demand Report Selector window.	
33.	Click on the '**AM1_CDH_I**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CDH_I are displayed in the text area.	
34.	Select '**CDH_IR_PDP_BDU_EPCA**' in the available parameter text area Click on the → button.	CDH_IR_PDP_BDU_EPCA is displayed in the Selected text area.	
35.	Click on the '**AM1_CDH_I**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	

36.	Click on the '**AM1_COM_P**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_COM_P are displayed in the text area.	
37.	Select '**COM_PR_SBT2_FWD_RF'** in the available parameter text area. Click on the → button.	COM_PR_SBT2_FWD_RF is displayed in the Selected text area.	
38.	Click on the '**AM1_COM_P**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	
39.	Click on the '**AM1_GNC_B**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_GNC_B are displayed in the text area.	
40.	Select '**GNC_BR_ESA1_TRL**_EDG' in the available parameter text area Click on the → button	GNC_BR_ESA1_TRL_EDG is displayed in the Selected text area.	
41.	Click on the '**AM1_GNC_B**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	
42.	Click on the '**AM1_CDH_B**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CDH_B are displayed in the text area.	
43.	Select '**CDH_BR_CDHBU_VALDAT'** in the available parameter text area Click on the → button	CDH_BR_CDHBU_VALDAT is displayed in the Selected text area.	
44.	Click on the '**AM1_CDH_B**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	
45.	Click on the '**AM1_CDH_N**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CDH_N are displayed in the text area.	

46.	Select '**CDH_NR_ACT_B_FRCNT'** in the available parameter text area. Click on the → button.	CDH_NR_ACT_B_FRCNT is displayed in the Selected text area.	
47.	Click on the '**AM1_CDH_N**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	
48.	Click on the '**AM1_CDH_S**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CDH_S are displayed in the text area.	
49.	Select '**CDH_SR_QLTY4'** in the available parameter text area. Click on the → button.	CDH_SR_QLTY4 is displayed in the Selected text area.	
50.	Click on the '**AM1_CDH_S**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	
51.	Click on the '**AM1_CDH_C**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CDH_C are displayed in the text area.	
52.	Select '**CDH_CR_SSR1_CMDBUS**' in the available parameter text area. Click on the → button.	CDH_CR_SSR1_CMDBUS is displayed in the Selected text area.	
53.	Select '**CDH_CR_C_ERA_SBRY_1**' in the available parameter text area Click on the → button.	CDH_CR_C_ERA_SBRY_1 is displayed in the Selected text area.	
54.	Click on the '**AM1_CDH_C**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	

55.	Click on the '**AM1_COM_B**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_COM_B are displayed in the text area.	
56.	Select '**COM_BR_SBT2_PN_LOCK**' in the available parameter text area Click on the → button	COM_BR_SBT2_PN_LOCK is displayed in the Selected text area.	
57.	Click on the '**AM1_COM_B**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	
58.	Click on the '**AM1_GNC_S**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_GNC_S are displayed in the text area.	
59.	Select '**GNC_SR_FIN_PTCHERR1**' in the available parameter text area. Click on the → button.	GNC_SR_FIN_PTCHERR1 is displayed in the Selected text area.	
60.	Click on the '**AM1_GNC_S**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	
61.	Select '**CDH_CR_C_ERA_SBRY_1**' mnemonic in the Selected Text area. Click on the ← button.	CDH_CR_C_ERA_SBRY_1 is removed from the list	
62.	Click 'Apply' button.	The report will generate	
63.	Click on 'Retrieve Report'.	Netscape is activated and the Report Browser appears.	
64.	In the Reports Browser window, scroll down to the Time Order Down Link reports folder. Double click on the folder.	The folder will open and display a list of Time Order Down Link Reports.	

65.	Double click on Myrequest1.	Myrequest1 will open and be displayed in the Time Ordered format.	
66.	Select Myrequest1 Click on the File pull down menu on Netscape.	A list of options will appear.	
67.	Select Print	A dialog box will open asking what printer to use.	
68.	Enter *printername* in the text box.	The report will print	
69.	Retrieve the report.	Via off line analysis verify the report contains the following information: The date and time of the report The starting spacecraft time of the data The ending spacecraft time of the data Telemetry mnemonics are either of EU conversion or raw value The telemetry parameters are in order in which they are sampled by the spacecraft Spacecraft time for each telemetry mnemonic is provided in the report. Via off - line analysis compare the Time Order Downlink Report with the archived files used to create the request to verify that correct EU conversions and/or raw values that were supplied for each telemetry mnemonic selected in the report.	

70.	**Custom Report** Select 'Report Generator' from the Control window tools menu.	The Report Selector window will be displayed.	
71.	Click on 'Custom' button.	The custom Report Specification window will open.	
72.	**Custom Report Template** Select 'Custom Report' from the Control window tools menu.	The Custom Report window will be displayed. Verify that it contains the following field and user interfaces: ASCII files off-line analysis products screen snaps descriptive text other routine reports Margins Fonts Existing templates	
73.	Click on 'Margins'.	The Margin Selector window will appear	

74.	Enter into the TOP text field: **1** Enter into the BOTTOM text field: **1** Enter into the LEFT text field: **1** Enter into the RIGHT text field: **1**	The margins will be set and the Margin Selector window will close.	
75.	Click on 'Font' pull down menu.	A listing of the available fonts will be displayed.	
76.	Click on 'Insert ASCII files'.	The ASCII files selector window will open.	
77.	Select the **TBD** file to be inserted into the report and Click on 'Apply'.	The **TBD** file will be inserted into the report.	
78.	Click on 'Insert Snap'.	A listing of screen snaps will be displayed.	
79.	Select **TBD** screen snap. Click on 'Apply'.	The **TBD** screen snap will be inserted into the report.	
80.	From the File pull down menu. Select 'Save As…'.	A message dialog box will be displayed.	
81.	Enter **CustomReport1**. Press Return.	CustomReport1 will be saved.	

82.	**<u>Verify the report was saved.</u>** Select 'Open' from the file pull down menu.	A list of file options will be displayed.	
83.	Select **CustomReport1** file. Click on 'Open'.	**CustomReport1** will open and will look like the orginal.	
84.	Click on 'Cancel'.	The file will close.	
85.	Select 'Report Generator' from the Control window tools menu.	The Report Selector window will be displayed.	
86.	Click on 'Custom' button.	The custom Report Specification window will open.	
87.	Click on 'Modify'.	A list of reports will be displayed	
88.	Select a report to modify.	The selected report will be hightlighted.	
89.	Click on 'Open'.	The selected report will be displayed.	
90.	Select 'Analysis Product'. Click on 'Apply'.	A list of Analysis Products will be displayed	
91.	Select **TBD** product. Click on 'Insert'. Click on 'Apply'.	The selected analysis product will be inserted into the custom report.	
92.	Click on 'Modify'.	A list of reports will be displayed	
93.	Select a **TBD** report to Modify. Click on 'Open'.	The selected report will be displayed.	

94.	Select ‘Text’. Click on ‘Apply’.	A list of predefined text will be displayed.	
95.	Select a **TBD** text option. Click on ‘Insert’. Click on ‘Apply’.	The selected text will be inserted into the report.	
96.	From the File pull down menu. Select ‘Save As…’	A message dialog box will be displayed.	
97.	Enter **TBD** file name. Press Return.	The **TBD** file will be saved.	
98.	Click on ‘Print’.	The report will print. Verify the information contained in the report is correct.	
99.	Select ‘Custom Report’ from the Control window tools menu.	The Custom Report window will be displayed.	
100.	Click on ‘Report Templates’.	A list of the report templates will be displayed.	
101.	Select **TBD.** Click on ‘Delete’.	A message dialog box will be displayed.	
102.	Click on ‘Yes’	The report template will be deleted.	
103.	**Graph** Invoke the Analysis Request Builder. Click on the ‘Tools’ button.	The Tools Dialog window and a list of tools is displayed to the user.	

104.	Select 'Analysis_Request_Builder'. Click on 'OK' button.	The Analysis Request Builder window is displayed	
105.	Click the File pull down menu.	A list of options appears.	
106.	Select 'Open'.	The File Selection window is displayed.	
107.	Select '**GraphARTemp**'. Click the 'OK' button.	The Analysis Request named GraphARTemp is displayed	
108.	Check the Request Status text area in the Analysis Request Builder window.	The Request Status will indicate Read/Edit Request.	
109.	Click the 'All Data' button	The 'All Data' button will be selected.	
110.	Select an output dataset name for the analysis request. Click the output dataset name toggle button. Enter the name of the output dataset (request name): **Graphin**	Graphin will be displayed in the Output Dataset Name box.	
111.	Click the 'Graph' toggle button. Click the 'Format …' button.	Graph format window is displayed	
112.	Select **All** parameters from the Available text area. Click the '→' button.	The selected parameter will appear in the Selected text area.	
113.	Enter the graph title in the 'Title' box: **Graphin**	The title will be displayed in the Title text box.	

114.	Select the ‘Axes’, ‘Legend’, ‘Grid’, ‘Footer’ toggle buttons.	The selected toggles button will be selected.	
115.	Select ‘Axes’ from the Edit pull down menu.	Axes will be displayed	
116.	Enter the X Axis Label: **‘X’**	X will be displayed in the X Axis Label text area.	
117.	Enter the X Axis Parameter: **SDU_SCTIME**	SDU_SCTIME will be displayed in the X Axis Parameter Label text area.	
118.	Enter the X Axis Display Interval: **‘5 sec’**	**5 sec** will be displayed in the X Axis Display Interval text area.	
119.	Enter the X Axis Display Min: **‘3’**	3 will be displayed in the X Axis Display Min text area.	
120.	Enter the X Axis Display Max: **‘25’**	25 will be displayed in the X Axis Display Max text area.	
121.	Enter the X Axis Grid Granularity: **‘.5’**	.5 will be displayed in the X Axis Grid Granularity text area.	
122.	Enter the Y Axis Label: **‘Y’**	Y will be displayed in the Y Axis Label text area.	
123.	Enter the Y Axis Display Min: **‘5’**	5 will be displayed in the Y Axis Display Min text area.	

124.	Enter the Y Axis Display Max: **'30'**	30 will be displayed in the Y Axis Display Max text area.	
125.	Enter the Y Axis Grid Granularity: **'.5'**	.5 will be displayed in the Y Axis Grid Granularity text area.	
126.	Click on 'Apply' button.	The desired attributes are saved.	
127.	Select 'Legend' from Edit pull down menu.	Settings for Legend will be displayed.	
128.	Select from the Positional toggle area: '**South**'	South toggle button will be selected.	
129.	Click on 'Apply' button.	The desired attributes are saved.	
130.	Select 'Footer' from Edit pull down menu.	Settings for Footer will be displayed.	
131.	Enter into the Footer text box: **This is a graph called Graphin.**	The text will appear in the footer text area.	
132.	Select from the Border Type toggle area: '**Shadow**'	Shadow toggle button will be selected.	
133.	Click on 'Apply' button.	The desired attributes are saved	
134.	Select 'Color and Line Style' from Edit pull down menu.	Settings for Color and Line Style will be displayed	
135.	Select **CDH_IR_PRP_BDU_EPCA** in the parameter box.	CDH_IR_PRP_BDU_EPCA is highlighted	

136.	Select from the Line Attributes pull down menu: '**Dotted**'	Dotted will be displayed.	
137.	Select from the Point Attributes pull down menu: '**Circle**'	Circle will be displayed.	
138.	Select from the Color Attributes pull down menu: '**Red**'	Red will be displayed.	
139.	Select from the Limit Line Attributes pull down menu: '**Dotted**'	Dotted will be displayed.	
140.	Click on 'Apply' button.	The desired attributes are applied.	
141.	Select **GNC_SR_ESS2_RPM** parameter in the parameter box.	GNC_SR_ESS2_RPM is highlighted	
142.	Select from the Line Attributes pull down menu: '**Dash**'	Dash will be displayed.	
143.	Select from the Point Attributes pull down menu: '**Square**'	Square will be displayed.	
144.	Select from the Color Attributes pull down menu: '**Yellow**'	Yellow will be displayed.	
145.	Select from the Limit Line Attributes pull down menu: '**Dashed**'	Dashed will be displayed.	

146.	Click on ‘Apply’ button.	The desired attributes are applied.	
147.	Select **EPS_SR_BBAT_CHRGRTA** parameter in the parameter box.	EPS_SR_BBAT_CHRGRTA is highlighted.	
148.	Select from the Line Attributes pull down menu: ‘**Solid**’	Solid will be displayed.	
149.	Select from the Point Attributes pull down menu: ‘**Triangle**’	Triangle will be displayed.	
150.	Select from the Color Attributes pull down menu: ‘**Yellow**’	Yellow will be displayed.	
151.	Select from the Limit Line Attributes pull down menu: ‘**Solid**’	Solid will be displayed.	
152.	Click on ‘Apply’ button.	The desired attributes are applied.	
153.	Select **EPS_VR_PBAT_CELL53A** parameter in the parameter box.	EPS_VR_PBAT_CELL53A is highlighted	
154.	Select from the Line Attributes pull down menu: ‘**Solid**’	Solid will be displayed.	
155.	Select from the Point Attributes pull down menu: ‘**Triangle**’	Triangle will be displayed.	
156.	Select from the Color Attributes pull down menu: ‘**Red**’	Red will be displayed.	

157.	Select from the Limit Line Attributes pull down menu: '**Solid**'	Solid will be displayed.	
158.	Click on 'Apply' button.	The desired attributes are applied.	
159.	Click on the 'OK' button.	The Analysis Request Builder window appears.	
160.	**Save the analysis request.** Save the analysis request. Click on the File pull down menu.	A list of options appears.	
161.	Select 'Save as…'.	A File Selection window is displayed with a default directory path in the selection field. The default directory path will be /fosb/test/am1/data/FUI/requests/.	
162.	Enter the name of the request: **Graphin** Click the 'OK' button.	A dialog box informing the user that the file was saved.	
163.	Click the 'Close' button in the information dialog box.	The dialog box will close.	
164.	Click the 'OK' button in the Analysis Request Builder window.	A dataset for the given options selected has been generated.	
165.	Click on the 'Tlm Wins' button.	A list of tlm pages are displayed to the user	
166.	Select 'Graphin'.	Graphin page will be displayed.	

167.	Monitor the Event Display for the message Analysis Request **X** has started on Host **N**. Where X = the number of the request and N = the Name of the Host machine that started the request.	Wait for an event message indicating that the analysis request is complete. In the Events Display window, a message will be displayed 'Analysis Request **X** completed on Host **N**.'	
168.	**Save a Graph** Click on File pull down Menu. Select 'Save As…'	A dialog box will appear	
169.	Enter '**Saved Graph**' in the dialog box. Click 'OK' button.	The dialog box will close and the graph will be saved.	
170.	**To Print the Graph** Display the graph on the screen. In a terminal window enter snap. Select Landscape or Portrait.	The graph will be printed. Verify the graph contains the minimum, current, and maximum values for a selected telemetry parameter. Verify that a selected telemetry mnemonic does not exist in the graph.	
171.	Click on 'Zoom In' button.	A selected area of the graph will be enlarged (Zoomed in on).	
172.	Click on 'Zoom Out' button.	The graph will return to it's original state.	
173.	Bring up Graphin four times. In a terminal window enter snapframe.	This will print the whole screen of four graphs.	

174.	**<u>To Delete a graph</u>** Click on the 'File' pull down menu. Select 'Delete'. Enter name of graph to be deleted.	The graph will be deleted	
175.	**<u>Display a Table</u>** Invoke a previously saved Analysis Request. Select 'Tools' from the Control window.	The Tools Dialog window is displayed.	
176.	Select 'Analysis_Request_Builder'. Click on 'OK' button.	The Analysis Request Builder window is displayed.	
177.	Click the File pull down menu.	A list of options appears.	
178.	Select 'Open'.	The File Selection window is displayed.	
179.	Select '**TableARTemp**'. Click the 'OK' button.	The Analysis Request named TeableARTemp is displayed.	
180.	Check the Request Status text area in the Analysis Request Builder window.	The Request Status will indicate Read/Edit Request.	

181.	Select an output dataset name for the analysis request. Click the output dataset name toggle button. Enter the name of the output dataset (request name): **Tablein**	Tablin will be displayed in the Output Dataset Name box.	
182.	Click on 'Table' toggle button. Click 'Format' button.	The 'Table Format' window is displayed	
183.	**Select Parameters** Select '**All**' parameters from the Available text area. Click on the → button	The selected parameters will be displayed in the Selected text area.	
184.	Enter '**Tablin**' in the Title text area	**Tablin** will be displayed.	
185.	Select Column Names. Click on 'Mnemonic' button.	The Column Names will be displayed by Mnemonics.	
186.	**Save the analysis request** Save the analysis request. Click on the File pull down menu.	A list of options appears.	
187.	Select 'Save as…'.	A File Selection window is displayed with a default directory path in the selection field. The default directory path will be /fosb/test/am1/data/FUI/requests/.	

188.	Enter the name of the request: **Tablein** Click the 'OK' button.	A dialog box informing the user that the file was saved.	
189.	Click the 'Close' button in the information dialog box.	The dialog box will close.	
190.	Click the 'OK' button.	The Analysis Request has been resubmitted	
191.	Click on the 'Tlm Wins' button.	A list of tlm pages are displayed to the user	
192.	Select 'Tablein'.	Tablein page will be displayed.	
193.	Monitor the Event Display for the message Analysis Request **X** has started on Host **N**. Where X = the number of the request and N = the Name of the Host machine that started the request.	Wait for an event message indicating that the analysis request is complete. In the Events Display window, a message will be displayed 'Analysis Request **X** completed on Host **N**.'	
194.	**Save a Table** Click on File pull down Menu. Select 'Save As…'	A dialog box will appear.	
195.	Enter '**Tablein**' in the dialog box. Click 'OK' button.	The dialog box will close and the Table will be saved.	

196.	**<u>Print the Table</u>** Display the Table on the screen. In a terminal window enter screen snap.	The Table will be printed. Verify the table contains: -50 Parameters -associated time at each interval -the mnemonic of each telemetry value -title -current range of time is displayed.	
197.	Invoke a previously saved Analysis Request. Select 'Tools' from the Control window.	The Tools Dialog window is displayed	
198.	Select 'Analysis_Request_Builder'. Click on 'OK' button.	The Analysis Request Builder window is displayed	
199.	Click the File pull down menu.	A list of options appears.	
200.	Select 'Open'.	The File Selection window is displayed.	
201.	Select '**TableARTemp**'. Click the 'OK' button.	The Analysis Request named TableARTemp is displayed	
202.	Check the Request Status text area in the Analysis Request Builder window.	The Request Status will indicate Read/Edit Request.	

203.	Select an output dataset name for the analysis request. Click the output dataset name toggle button. Enter the name of the output dataset (request name): **Tablein2**	Tablein2 will be displayed in the Output Dataset Name box.	
204.	Click on 'Table' toggle button. Click 'Format' button.	The 'Table Format' window is displayed.	
205.	**Select Parameters** Select '**All**' parameters from the Available text area. Click on the → button.	The selected parameters will be displayed in the Selected text area.	
206.	Enter '**Tablein2**' in the Title text area.	**Tablein2** will be displayed.	
207.	Select Column Names. Click on 'Descriptor' button.	The Column Names will be displayed by Descriptor.	
208.	**Save the analysis request** Save the analysis request. Click on the File pull down menu.	A list of options appears.	
209.	Select 'Save as…'.	A File Selection window is displayed with a default directory path in the selection field. The default directory path will be /fosb/test/am1/data/FUI/requests/.	

210.	Enter the name of the request: **Tablein2** Click the 'OK' button.	A dialog box informing the user that the file was saved.	
211.	Click the 'Close' button in the information dialog box.	The dialog box will close.	
212.	Click the 'OK' button.	The Analysis Request has been resubmitted.	
213.	Click on the 'Tlm Wins' button.	A list of tlm pages are displayed to the user.	
214.	Select 'Tablein2'.	Tablein2 page will be displayed.	
215.	Monitor the Event Display for the message Analysis Request **X** has started on Host **N**. Where X = the number of the request and N = the Name of the Host machine that started the request.	Wait for an event message indicating that the analysis request is complete. In the Events Display window, a message will be displayed 'Analysis Request **X** completed on Host **N**.'	
216.	**To Delete a Table** Click on the 'File' pull down menu. Select 'Delete'. Enter name of Tablein2 to be deleted.	The Tablein2 will be deleted.	
217.	End of test.		

Parameter Out of Limits Report Test Procedure

Test Case No: ANA-2070B

Test Configuration: See Appendix G

Test Support: The ability to manipulate packet times within the data and the ability to manipulate file times of the previously archived filed (to simulate different hours of the day and different days of the months).

Test Dependencies: Previously archived telemetry: housekeeping, health & safety, and standby (three files).

Test Case Description:

This test is designed to verify the ability to generate a dataset for out of limits statistics for durations of one day and one month. Display and print parameter out of limits reports based on out-of-limit report request information selected from an analysis request.

The test begins with the initialization of the EOC to support off-line analysis processing. Two analysis requests are built and a historical requests are generated, with selected options including request name, start/stop time interval, parameter names, and sampling rates, for the duration of one day and one month. The requests are saved, and then submitted for dataset generation based on the menu options previously submitted. Following the generation of each dataset, reports are requested for output to the screen and to configured line printers. Parameter Out of Limit Reports are generated and analyzed post-test to ensure dataset accuracy and integrity. The last portion of the test deals with error conditions, mnemonics not in the selected time period of the report.

Success Criteria:

Each Parameter Out of Limits Report contains each telemetry parameter name violating a limit definition, the spacecraft time for the start of each violation, duration of each violation and sum of durations of all limit violations within the duration of the report. Each report includes limit violation information for specified parameters and for specified time periods only. Telemetry archive data integrity is not compromised during the dataset and report generation processes. Any invalid mnemonic names specified in the parameter out of limits report request are flagged and event messages are generated. Invalid mnemonic specifications do not affect dataset and report generation activity. Limit violation information contained in the report matches dataset content. Printouts of the out of limits reports match user interface display of the same report. Requests of Parameter Out of Limits Reports based on existing datasets is allowable, with the above success criteria applied.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	**Start the Data Server.** Reference Test Case SYS-2000B -- FOS Server Startup.	Data Server processes are running.	
2.	**Start the Real-Time Server.** Reference Test Case SYS-2000B -- FOS Server Startup.	Real-Time Server processes are running.	
3.	**Start the User Station.** Reference Test Case SYS-2010B -- User Station Startup and Authentication.	The FOT User Station is running and the 'Control window' is displayed.	
4.	**Bring up the Event Display.** Select 'Event_Display_Local' from the Control window tools menu.	The 'Event Display' is up on the FOT User Station.	

5.	**<u>One Day:</u>** **<u>Invoke the Analysis Request Builder</u>** Click on the 'Tools' button.	The Tools Dialog window and a list of tools is displayed to the user.	
6.	Click on 'Analysis_Request_Builder'. Click on the 'OK' button.	The Analysis Request Builder window is displayed.	
7.	Enter into the request name field: **Day1**	Day1 appears in the Request Name field	
8.	Click the 'EOC Only' button to select data to be processed in the EOC.	'EOC Only' button should show selected	
9.	Verify that the default data quality is Good Data Only.	The 'Good Data Only' button should show selected	
10.	**<u>Selecting Telemetry Points</u>** Invoke the Telemetry Selector Window: Click on the 'Select Telemetry …' button.	The Telemetry Selector window is displayed.	
11.	Invoke the Selection Filter Screen: Click on the 'Filter…' button.	The Selection Filter Screen is displayed	
12.	**Note:** Fields are displayed as the user selects a filter criteria. Select '**AM1**' in the Spacecraft text area.	Instruments associated with AM1 are displayed in the Instrument text area	
13.	Select '**CDH**' in the Instrument text area.	Sample Types associated with 'CDH' are displayed in the Sample Type text area	

14.	Select '**C**' in the sample type text area. Click the 'Select' button.	The subsystem mnemonic 'AM1_CDH_C' is displayed in the Selected text area.	
15.	Select '**N**' in the sample type text area. Click the 'Select' button.	The subsystem mnemonic 'AM1_CDH_N' is displayed in the Selected text area.	
16.	Select '**COM**' in the Instrument text area.	Sample Types associated with 'COM' are displayed in the Sample Type text area	
17.	Select '**P**' in the sample type text area. Click the 'Select' button.	The subsystem mnemonic 'AM1_COM_P' is displayed in the Selected text area.	
18.	Select '**EPS**' in the Instrument text area.	Sample Types associated with 'EPS' are displayed in the Sample Type text area	
19.	Select '**T**' in the sample type text area. Click the 'Select' button.	The subsystem mnemonic 'AM1_EPS_T' is displayed in the Selected text area.	
20.	Select '**GNC**' in the Instrument text area.	Sample Types associated with 'GNC' are displayed in the Sample Type text area	
21.	Select '**S**' in the sample type text area. Click the 'Select' button.	The subsystem mnemonic 'AM1_GNC_S' is displayed in the Selected text area.	
22.	Select '**MOD**' in the Instrument text area.	Sample Types associated with 'MOD' are displayed in the Sample Type text area	
23.	Select '**C**' in the sample type text area. Click the 'Select' button.	The subsystem mnemonic 'AM1_MOD_C' is displayed in the Selected text area.	

24.	Click the 'OK' button.	The filter list is displayed in the Analysis Telemetry Selector window in the Subsystems section.	
25.	Click the '**AM1_CDH_C**' toggle button in the subsystems text area.	A list of mnemonics associated with 'AM1_CDH_C' are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
26.	Select **'CDH_CR_CERA_SBRY_1'** in the available parameters text area. Select a sampling rate. Click the 'Changes Only' button. Click the 'Select' button.	CDH_CR_CERA_SBRY_1 along with the selected sample rate are displayed in the Selected Parameters field.	
27.	Click the **'AM1_CDH_C'** toggle button in the subsystems text area..	The list of mnemonics in the Available Parameters text area are removed.	
28.	Click the '**AM1_CDH_N**' toggle button in the subsystems text area.	A list of mnemonics associated with 'AM1_CDH_N' are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
29.	Select **'CDH_NR_ACT_SBRY_2'** in the available parameters text area. Select a sampling rate. Click the 'Changes Only' button. Click the 'Select' button.	CDH_NR_ACT_SBRY_2 along with the selected sample rate are displayed in the Selected Parameters field.	
30.	Click the **'AM1_CDH_N'** toggle button in the subsystems text area.	The list of mnemonics in the Available Parameters text area are removed.	

31.	Click the '**AM1_COM_P**' toggle button in the subsystems text area.	A list of mnemonics associated with 'AM1_COM_P' are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
32.	Select **'COM_PR_SBT1_FWD_RF'** in the available parameters text area. Select a sampling rate. Click the 'All Data' button. Click the 'Select' button.	COM_PR_SBT1_FWD_RF along with the selected sample rate are displayed in the Selected Parameters field.	
33.	Click the **'AM1_COM_P'** toggle button in the subsystems text area.	The list of mnemonics in the Available Parameters text area are removed.	
34.	Click the **'AM1_EPS_T'** toggle button in the subsystems text area..	A list of mnemonics associated with 'AM1_EPS_T' are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
35.	Select '**EPS_TR_BPC2_A**' in the available parameters text area. Select a sample rate. Enter into the 'Nth sample' field: **1** Click the 'Select' button.	EPS_TR_BPC2_A along with the selected sample rate are displayed in the Selected Parameters field.	
36.	Click the **'AM1_EPS_T'** toggle button in the subsystems text area.	The list of mnemonics in the Available Parameters text area are removed.	

37.	Click the **'AM1_GNC_S'** toggle button in the subsystems text area.	A list of mnemonics associated with 'AM1_GNC_S' are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
38.	Select '**GNC_SR_ST_HKRY_1**' in the available parameters text area. Select a sample rate. Enter into the 'Nth sample' field: **5** Click the 'Select' button.	**GNC_ST_ST_HKRY_1** along with the selected sample rate are displayed in the Selected Parameters field.	
39.	Click the **'AM1_GNC_S'** toggle button in the subsystems text area.	The list of mnemonics in the Available Parameters text area are removed.	
40.	Click the **'AM1_MOD_C'** toggle button in the subsystems text area.	A list of mnemonics associated with 'AM1_MOD_C' are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
41.	Select **'MOD_CR_CP_HSRY_1'** in the available parameters text area. Select a sampling rate. Click the 'All Data' button. Click the 'Select' button.	MOD_CR_CP_HSRY_1 along with the selected sample rate are displayed in the Selected Parameters field.	
42.	Click on the 'OK' button.	Telemetry points and associated sample rates selected match the Selected Telemetry table in the Analysis Request window.	

43.	**Selecting Time** Invoke the Time Selector Window: Click on the 'Select Time' button.	The Pair Time Selector window is displayed.	
44.	Click on the 'Absolute' button.	The 'Absolute' button is selected.	
45.	Click on the 'Time' button.	The 'Time' button is selected.	
46.	Click on the 'Specify End Time' button.	The 'Specify End Time' button is selected.	
47.	**Note:** The time entered will reflect 1 day. Enter into the stop date field: **TBD**	YYYY/DDD is displayed in stop date field.	
48.	Enter into the stop time field: **TBD**	HH:MM:SS.SSS is displayed in stop time field.	
49.	Enter into the start date field: **TBD**	YYYY/DDD is displayed in start date field.	
50.	Enter into the start time field: **TBD**	HH:MM:SS.SSS is displayed in start time field.	
51.	Click on the 'OK' button.	The selected start and stop times match the Selected Times table in the Analysis Request window.	
52.	Repeat Sub-routine for **Time Selection** until all desired times are selected.	There will be three time slices selected. One reflecting the beginning of the day, one reflecting the middle of the day, and one reflecting the end of the day to simulate a 24 hour time period.	

53.	Click on the output dataset name toggle button. Enter the following file name: **Day1**	The path name /fos/test/am1/datasets/Day1 will be displayed.	
54.	**Save the analysis request.** Click on the File pull down menu. Select 'Save as…'.	A File Selection window is displayed with a default directory path in the selection field. The default directory path will be /fos/test/am1//data/FUI/requests/.	
55.	Enter the following at the end of the directory path: **Day1** Click on the 'OK' button.	A dialog box informing the user that the file was saved.	
56.	Click on the 'Close' button in the information dialog box.	The dialog box will close.	
57.	Click on the 'OK' button in the Analysis Request Builder window.	A dataset for the given options selected has been generated.	
58.	Wait for an event message indicating that the analysis request is complete.	In the Events Display window, a message will be displayed 'Analysis Request complete.'	
59.	**Print a Parameter Out of Limits Report** Select 'Report Selector' from the Control window tools menu.	The Report Selector window is displayed.	

60.	Click the On-Demand toggle button. Select Spacecraft type ‘AM1’. Select Report Category ‘ANA’. Select from Available Reports text area ‘Parameter Out of Limits Report’. Click ‘OK’ button.	The On-Demand Report Specification window is displayed.	
61.	Note: Time selected will reflect 1 day. Enter Start Time: **TBD**	Report Start Time is displayed	
62.	Enter Stop Time: **TBD**	Report Stop Time is displayed	
63.	Enter Data Set: **TBD**	The Dataset to be used to crate the report will be displayed	
64.	Select parameters used in the report: Click on ‘Filter’ button.	The Selection Filter Window is displayed.	
65.	**Note:** At least one violation for each telemetry type is selected (red high, red low, yellow high, yellow low and rail). Select the Spacecraft type: ‘**AM1**’	The Instruments associated with AM1 will be displayed in the Instrument test area.	

66.	Select '**CDH**' in the Instrument text area.	Sample types associated with CDH are displayed in the Sample Type text area.	
67.	Select '**C**' in the Sample Type text area. Click the 'Select' button.	The subsystem mnemonic AM1_CDH_C is displayed in the Selected text area.	
68.	Select '**N**' in the Sample Type text area. Click the 'Select' button.	The subsystem mnemonic AM1_CDH_N is displayed in the Selected text area.	
69.	Select '**COM**' in the Instrument text area.	Sample types associated with COM are displayed in the Sample Type text area.	
70.	Select '**P**' in the Sample Type text area. Click the 'Select' button.	The subsystem mnemonic AM1_COM_P is displayed in the Selected text area.	
71.	Select '**EPS**' in the Instrument text area.	Sample types associated with EPS are displayed in the Sample Type text area.	
72.	Select '**T**' in the Sample Type text area. Click the 'Select' button.	The subsystem mnemonic AM1_EPS_T is displayed in the Selected text area.	
73.	Select '**GNC**' in the Instrument text area.	Sample types associated with GNC are displayed in the Sample Type text area.	
74.	Select '**S**' in the Sample Type text area. Click the 'Select' button.	The subsystem mnemonic AM1_GNC_S is displayed in the Selected text area.	
75.	Select '**MOD**' in the Instrument text area.	Sample types associated with MOD are displayed in the Sample Type text area.	

76.	Select '**C**' in the Sample Type text area. Click the 'Select' button.	The subsystem mnemonic AM1_MOD_C is displayed in the Selected text area.	
77.	Click the 'OK' button	The selected parameters will be displayed in the Selection Filter Area of the On-Demand Report Selector window.	
78.	Click the '**AM1_CDH_C**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CDH_C are displayed in the text area.	
79.	Select '**CDH_CR_CERA_SBRY_1**' in the available parameter text area. Click on the → button	CDH_CR_CERA_SBRY_1 is displayed in the Selected text area.	
80.	Click the '**AM1_CDH_C**' toggle button in the Selection Filter area.	A list of mnemonics in the available text area are removed.	
81.	Click the '**AM1_CDH_N**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CDH_N are displayed in the text area.	
82.	Select '**CDH_NR_ACT_SBRY_2**' in the available parameter text area. Click on the → button	CDH_NR_ACT_SBRY_2 is displayed in the Selected text area.	
83.	Click the '**AM1_CDH_N**' toggle button in the Selection Filter area.	A list of mnemonics in the available text area are removed.	
84.	Click the '**AM1_COM_P**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_COM_P are displayed in the text area.	

85.	Select '**COM_P_SBT1_FWD_RF**' in the available parameter text area. Click on the → button.	COM_P_SBT1_FWD_RF is displayed in the Selected text area.	
86.	Click the '**AM1_COM_P**' toggle button in the Selection Filter area.	A list of mnemonics in the available text area are removed.	
87.	Click the '**AM1_EPS_T**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_EPS_T are displayed in the text area.	
88.	Select '**EPS_TR_BPC2_A**' in the available parameter text area. Click on the → button.	EPS_TR_BPC2_A is displayed in the Selected text area.	
89.	Click the '**AM1_EPS_T**' toggle button in the Selection Filter area.	A list of mnemonics in the available text area are removed.	
90.	Click the '**AM1_GNC_S**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_GNC_S are displayed in the text area.	
91.	Select '**GNC_SR_ST_HKRY_1**' in the available parameter text area. Click on the → button.	GNC_SR_ST_HKRY_1 is displayed in the Selected text area.	
92.	Click the '**AM1_GNC_S**' toggle button in the Selection Filter area.	A list of mnemonics in the available text area are removed.	
93.	Click the '**AM1_MOD_C**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_MOD_C are displayed in the text area.	

94.	Select '**MOD_CR_CP_HSRY_1**' in the available parameter text area. Click on the → button.	MOD_CR_CP_HSRY_1 is displayed in the Selected text area.	
95.	Select '**MOD_CR_QLTY_2**' in the available parameter text area. Click on the → button.	MOD_CR_QLTY_2 is displayed in the Selected text area.	
96.	Select '**MOD_CR_QLTY_2**' in the Selected Text area Click on the ← button.	MOD_CR_QLTY_2 is removed from the Selected text area.	
97.	Click 'OK' button.	The report will generate.	
98.	Click on 'Retrieve Report'.	A list of available reports will be displayed.	
99.	Select the Parameter Out of Limits Report. Click 'Apply' button.	The report will print.	

100.	Retrieve the printout.	Via off-line analysis verify the report contains the following information: The date and time of the report. The starting spacecraft time of the data. The ending spacecraft time of the data. A list of parameters which are out of limits at the start of the report. Via off-line analysis review the report contains and the following information is correct: Spacecraft time for start of every limit violation. Duration of every limit violation which began within the span of the report. Sum of duration's of all violations within the duration of the report'. The type of limit violation: red-high, red-low, yellow-high, yellow-low and rail. Via off - line analysis compare the Parameter Out of Limits Report with the telemetry files used to create the request to verify that the information selected was correct for each telemetry mnemonic selected in the report.	
101.	Change the packet and telemetry archived file times.	The packet and telemetry archived times are changed to reflect different days of the month.	

102.	**<u>One Month:</u>** Repeat the sub-routine **<u>Invoke the Analysis Request Builder</u>**.	The Analysis Request Builder window is displayed.	
103.	Enter into the request name field: **Month1**	Month1 appears in the Request Name field.	
104.	Click the 'EOC Only' button to select data to be processed in the EOC.	'EOC Only' button should show selected.	
105.	Verify that the default data quality is Good Data Only.	The 'Good Data Only' button should show selected.	
106.	Repeat the sub-routine **<u>Selecting Telemetry Points</u>** and **<u>Selecting Time</u>**.	An Analysis Request is built to reflect one month. Note: There will be three time slices selected. One reflecting the beginning of the month, one reflecting the middle month, and one reflecting the end of the month to simulate a one month time period.	
107.	Click on the output dataset name toggle button. Enter the following file name: **Month1**	The path name /fos/test/am1/datasets/Month1 will be displayed.	
108.	Follow the sub routine for **<u>Save the analysis request.</u>**	A File Selection window is displayed with a default directory path in the selection field. The default directory path will be /fos/test/am1//data/FUI/requests/.	

109.	Enter the following at the end of the directory path: **Month1** Click on the 'OK' button.	A dialog box informing the user that the file was saved. The Analysis Request is submitted and generated.	
110.	Wait for an event message indicating that the analysis request is complete.	In the Events Display window, a message will be displayed 'Analysis Request complete.'	
111.	Follow the sub routine for **Print a Parameter Out of Limits Report**. **Note**: The time selected in the report will reflect 1 month.	Compare the report against the report for one day. All header information should reflect one month and all telemetry points should match.	
112.	Follow the sub routine for **Print a Parameter Out of Limits Report** **Note**: When selecting mnemonics, select one that is not in the dataset. Error Condition: Selecting a mnemonic not in the dataset. Select **TBD** mnemonic.	An error dialog box is displayed indicating the mnemonic selection is invalid.	
113.	Click the mouse on 'Close' button in the dialog box.	Dialog box will close.	
114.	Click on the 'Cancel' button.	The Report Windows will close and no report will be generated.	
115.	End of test.		

Analysis Products - Crossing Database Boundaries Test Procedure

Test Case No: ANA-2090B

Test Configuration: See Appendix G

Test Support: Previously saved Analysis Request to function as a template.

Test Dependencies: Telemetry Archive and retrieval; all telemetry formats supported in the archive and within start/stop boundaries of two separate databases. Two separate databases.

Test Case Description:

This test is designed to verify the ability to build a telemetry history request which uses more than one operational database to build the dataset. The historical request is generated using selected analysis options (i.e. telemetry parameter names, start/stop time intervals, sampling rates, etc.) from a combination of user interface and analysis tool menus.

The test begins with the initialization of the EOC to support off-line analysis processing. The Analysis Request Builder window is displayed, and a historical request is generated, with selected options including request name, start/stop time interval, parameter names, and sampling rates. The start/stop time interval selected spans two database IDs. The request is saved, and then submitted for dataset generation based on the menu options previously submitted. Following the generation of the dataset, a time order downlink report is generated and analyzed off-line to ensure that each portion of the dataset is based on the applicable database. The last portion of the test deals with the selection of menu options causing database crossover error conditions (mnemonics not matching one or more databases, etc.) and the ability to create and display a graph/view. Following the completion of each request, the request is submitted for dataset generation.

Success Criteria: User interface menus supporting telemetry history options include the proper fields (parameter names, data type, start/stop time intervals and data quality information. Via off-line analysis, it is determined that the telemetry history reports generated match dataset content, dataset content is based on the applicable database, and that data integrity is not compromised during the generation of a dataset using multiple databases. Via off-line analysis, report displays and printouts match parameter values as specified in the dataset, before and after the crossover period. Illegal options or typos entered into the FUI windows disallow dataset generation and result in error messages.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	**Start the Data Server.** Reference Test Case SYS-2000B -- FOS Server Startup.	Data Server processes are running.	
2.	**Start the Real-Time Server.** Reference Test Case SYS-2000B -- FOS Server Startup.	Real-Time Server processes are running.	
3.	**Start the User Station.** Reference Test Case SYS-2010B -- User Station Startup and Authentication.	The FOT User Station is running and the 'Control window' is displayed.	
4.	**Bring up the Event Display.** Select 'Event_Display' from the Control window tools menu.	The 'Event Display' is up on the FOT User Station.	
5.	**Invoke the Analysis Request Builder** Click the 'Tools' button.	The Tools Dialog window and a list of tools is displayed to the user.	
6.	Click on 'Analysis_Request_Builder'. Click the 'OK' button.	The Analysis Request Builder window is displayed.	
7.	**Create an Analysis Request** Enter into the request name field: **Crossdb1**	Crossdb1 appears in the Request Name field	

8.	Click the 'EOC Only' button to select data to be processed in the EOC.	'EOC Only' button should show selected	
9.	Click the 'All Data' button to select only good data to be processed.	The 'All Data' button should show selected	
10.	**<u>Selecting Telemetry Mnemonics</u>** Click on the 'Select Telemetry …' button.	The Telemetry Selector window is displayed.	
11.	**Note:** Fields are displayed as the user selects a filter criteria. Invoke the Selection Filter Screen: Click on the 'Filter…' button.	The Selection Filter Screen is displayed.	
12.	Select '**AM1**' in the Spacecraft text area.	Instruments associated with AM1 are displayed in the Instrument text area	
13.	Select '**CDH**' in the Instrument text area.	Sample Types associated with CDH are displayed in the Sample Type text area	
14.	Select '**B**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_B is displayed in the Selected text area.	
15.	Select '**C**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_C is displayed in the Selected text area.	
16.	Select '**I**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_I is displayed in the Selected text area.	

17.	Select '**N**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_N is displayed in the Selected text area.	
18.	Select '**S**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_S is displayed in the Selected text area.	
19.	Select '**CEA**' in the Instrument text area.	Sample Types associated with CEA are displayed in the Sample Type text area	
20.	Select '**C**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CEA_C is displayed in the Selected text area.	
21.	Select '**V**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CEA_V is displayed in the Selected text area.	
22.	Select '**CEF**' in the Instrument text area.	Sample Types associated with CEF are displayed in the Sample Type text area	
23.	Select '**N**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CEF_N is displayed in the Selected text area.	
24.	Select '**COM**' in the Instrument text area.	Sample Types associated with COM are displayed in the Sample Type text area	
25.	Select '**B**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_COM_B is displayed in the Selected text area.	
26.	Select '**I**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_COM_I is displayed in the Selected text area.	

27.	Select '**P**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_COM_P is displayed in the Selected text area.	
28.	Select '**EAS**' in the Instrument text area.	Sample Types associated with EAS are displayed in the Sample Type text area	
29.	Select '**B**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_EAS_B is displayed in the Selected text area.	
30.	Select '**EPS**' in the Instrument text area.	Sample Types associated with EPS are displayed in the Sample Type text area	
31.	Select '**S**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_EPS_S is displayed in the Selected text area.	
32.	Select '**T**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_EPS_T is displayed in the Selected text area.	
33.	Select '**FS1**' in the Instrument text area.	Sample Types associated with FS1 are displayed in the Sample Type text area	
34.	Select '**N**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_FS1_N is displayed in the Selected text area.	
35.	Select '**GNC**' in the Instrument text area.	Sample Types associated with GNC are displayed in the Sample Type text area	
36.	Select '**B**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_GNC_B is displayed in the Selected text area.	

37.	Select '**S**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_GNC_S is displayed in the Selected text area.	
38.	Select '**PMS**' in the Instrument text area.	Sample Types associated with PMS are displayed in the Sample Type text area	
39.	Select '**T**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_PMS_T is displayed in the Selected text area.	
40.	Select '**SMS**' in the Instrument text area.	Sample Types associated with SMS are displayed in the Sample Type text area	
41.	Select '**S**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_SMS_S is displayed in the Selected text area.	
42.	Select '**TCS**' in the Instrument text area.	Sample Types associated with TCS are displayed in the Sample Type text area	
43.	Select '**I**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_TCS_I is displayed in the Selected text area.	
44.	Click the 'OK' button.	The filter list is displayed in the Analysis Telemetry Selector window in the Subsystems section.	
45.	Click on the '**AM1_CDH_I**' toggle button in the subsystems text area.	A list of mnemonics associated AM1_CDH_I with are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

46.	Select **'CDH_IR_PRP_BDU_EPCA'** in the available parameters text area. Select a sampling rate. Click the 'All Data' button. Click the 'Select' button.	CDH_IR_PRP_BDU_EPCA along with the selected sample rate are displayed in the Selected Parameters field.	
47.	Click the **'AM1_CDH_I'** toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
48.	Click the **'AM1_COM_P'** toggle button.	A list of mnemonics associated AM1_COM_P with are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
49.	Select **'COM_PR_SBT2_FWD_RF'** in the available parameters text area. Select a sampling rate. Click the 'All Data' button. Click the 'Select' button.	COM_PR_SBT2_FWD_RF along with the selected sample rate are displayed in the Selected Parameters field.	
50.	Click on the '**AM1_COM_P**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
51.	Click on the '**AM1_EAS_B**' toggle button.	A list of mnemonics associated with AM1_EAS_B are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

52.	Select: **'EAS_BR_HGA_BOX1A_ARM'** **'EAS_BR_NEA_BUSA'** **'EAS_BR_SA_BOXE1A_ARM'** **'EAS_BR_SA_BOXI2A_ARM'** **'EAS_BR_SA_CAN2A_ARM'** in the available parameters text area. Select a sampling rate. Click the 'All Data' button. Click the 'Select' button.	Mnemonics: EAS_BR_HGA_BOX1A_ARM EAS_BR_NEA_BUSA EAS_BR_SA_BOXE1A_ARM EAS_BR_SA_BOXI2A_ARM EAS_BR_SA_CAN2A_ARM along with the selected sample rate are displayed in the Selected Parameters field.	
53.	Click on the '**AM1_EAS_B**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
54.	Click on the '**AM1_EPS_S**' toggle button.	A list of mnemonics associated with AM1_EPS_S are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

55.	Select: **'EPS_SR_ADEADRIVERATE'** **'EPS_SR_BBAT_CHRGRTA'** **'EPS_SR_PBAT_VTCRVA'** **'EPS_SR_SA_RAT_ADJ_A'** in the available parameters text area. Select a sampling rate. Click the 'All Data' button. Click the 'Select' button.	Mnemonics: EPS_SR_ADEADRIVERATE EPS_SR_BBAT_CHRGRTA EPS_SR_PBAT_VTCRVA EPS_SR_SA_RAT_ADJ_A along with the selected sample rate are displayed in the Selected Parameters field.	
56.	Click on the '**AM1_EPS_S**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
57.	Click on the '**AM1_EPS_T**' toggle button.	A list of mnemonics associated with AM1_EPS_T are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
58.	Select **'EPS_TR_PBAT_CELL39B'** in the available parameters text area. Select a sampling rate. Click the 'All Data' button. Click the 'Select' button.	EPS_TR_PBAT_CELL39B along with the selected sample rate are displayed in the Selected Parameters field. (This mnemonic will have different r/y limits in the different dbs).	
59.	Click on the '**AM1_EPS_T**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	

60.	Click on the '**AM1_GNC_B**' toggle button.	A list of mnemonics associated with AM1_GNC_B are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
61.	Select **'GNC_BR_ESA1_TRL_EDG'** in the available parameters text area. Select a sampling rate. Click the 'All Data' button. Click the 'Select' button.	GNC_BR_ESA1_TRL_EDG along with the selected sample rate are displayed in the Selected Parameters field.	
62.	Click on the '**AM1_GNC_B**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
63.	Click on the '**AM1_PMS_T**' toggle button.	A list of mnemonics associated with AM1_PMS_T are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

64.	Select: **'PMS_TRCAT_BED_S03'** **'PMS_TR_EPC_1'** **'PMS_TR_PMEA1'** **'PMS_TR_PROP_LINE_13'** **'PMS_TR_PROP_TANK_S3'** in the available parameters text area. Select a sampling rate. Click the 'All Data' button. Click the 'Select' button.	Mnemonics: PMS_TRCAT_BED_S03 PMS_TR_EPC_1 PMS_TR_PMEA1 PMS_TR_PROP_LINE_13 PMS_TR_PROP_TANK_S3 along with the selected sample rate are displayed in the Selected Parameters field.	
65.	Click on the '**AM1_PMS_T**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
66.	Click on the '**AM1_SMS_S**' toggle button.	A list of mnemonics associated with AM1_SMS_S are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

67.	Select: **'SMS_SR_HGA_DS_POTA'** **'SMS_SR_HGA_DS_POTB'** in the available parameters text area. Select a sampling rate. Click the 'All Data' button. Click the 'Select' button.	Mnemonics: SMS_SR_HGA_DS_POTA SMS_SR_HGA_DS_POTB along with the selected sample rate are displayed in the Selected Parameters field.	
68.	Click on the '**AM1_SMS_S**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
69.	Select **'AM1_CDH_B'** toggle button in the Subsystem text area.	A list of mnemonics associated AM1_CDH_B with are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
70.	Select: **'CDH_BR_ACT_DPPLRRCVD'** **'CDH_BR_ACT_LV_UMB_IF'** **'CDH_BR_CDHBU_VALDAT'** **'CDH_BR_SCT_MSGFULL'** in the available parameters text area. Select a sampling rate. Click the 'Changes Only' button. Click the 'Select' button.	Mnemonics: CDH_BR_ACT_DPPLRRCVD CDH_BR_ACT_LV_UMB_IF CDH_BR_CDHBU_VALDAT CDH_BR_SCT_MSGFULL along with the selected sample rate are displayed in the Selected Parameters field.	

71.	Click on the '**AM1_CDH_B**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
72.	Select **'AM1_CDH_C'** toggle button in the Subsystem text area.	A list of mnemonics associated AM1_CDH_C with are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
73.	Select **'CDH_CR_ACT_INPUT_B1'** in the available parameters text area. Select a sampling rate. Click the 'Changes Only' button. Click the 'Select' button.	CDH_CR_ACT_INPUT_B1 along with the selected sample rate are displayed in the Selected Parameters field.	
74.	Click on the '**AM1_CDH_C**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
75.	Click on the '**AM1_CDH_N**' toggle button.	A list of mnemonics associated with AM1_CDH_N are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

76.	Select: **'CDH_NR_ACT_B_FRCNT'** **'CDH_NR_ACT _NXT_FRSEQ'** **'CDH_NR_SCT_CTCMDREJ'** in the available parameters text area. Select a sampling rate. Click the 'Changes Only' button. Click the 'Select' button.	Mnemonics: CDH_NR_ACT_B_FRCNT CDH_NR_ACT _NXT_FRSEQ CDH_NR_SCT_CTCMDREJ along with the selected sample rate are displayed in the Selected Parameters field.	
77.	Click on the '**AM1_CDH_N**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
78.	Click on the '**AM1_CDH_S**' toggle button.	A list of mnemonics associated with AM1_CDH_S are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
79.	Select **'CDH_SR_QLTY4'** in the available parameters text area. Select a sampling rate. Click the 'Changes Only' button. Click the 'Select' button.	CDH_SR_QLTY4 along with the selected sample rate are displayed in the Selected Parameters field.	
80.	Select **'AM1_CDH_S'** toggle button in the Subsystem text area.	AM1_CDH_S is deselected in the Subsystem text field and the list of available mnemonics is removed from the Available Parameters text field.	

81.	Select **'AM1_CDH_C'** toggle button in the Subsystem text area.	A list of mnemonics associated with AM1_CDH_C are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
82.	Select **'CDH_CR_SSR1_CMDBUS'** in the available parameters text area. Select a sample rate. Enter into the 'Nth sample' field: **1** Click the 'Select' button.	CDH_CR_SSR1_CMDBUS along with the selected sample rate are displayed in the Selected Parameters field.	
83.	Click on the '**AM1_CDH_C**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
84.	Select **'AM1_CEA_C'** toggle button in the Subsystem text area.	A list of mnemonics associated with AM1_CEA_C are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

85.	Select: **'CEA_CS_INSTR_ID'** **'CEA_CS_LWSTPTT'** **'CEA_CS_SWSTPTT'** **'CEA_CS_TSTPTT'** in the available parameters text area. Select a sample rate. Enter into the 'Nth sample' field: **1** Click the 'Select' button.	Mnemonics: CEA_CS_INSTR_ID CEA_CS_LWSTPTT CEA_CS_SWSTPTT CEA_CS_TSTPTT along with the selected sample rate are displayed in the Selected Parameters field.	
86.	Click on the '**AM1_CEA_C**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
87.	Select **'AM1_CEA_V'** toggle button in the Subsystem text area.	A list of mnemonics associated with AM1_CEA_V are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

88.	Select: **'CEA_VR_NVBMON'** **'CEA_VR_P15VMON'** **'CEA_VR_P5MON'** **'CEA_VR_SPSS2'** **'CEA_VR_SPST1'** in the available parameters text area. Select a sample rate. Enter into the 'Nth sample' field: **5** Click the 'Select' button.	Mnemonics: CEA_VR_NVBMON CEA_VR_P15VMON CEA_VR_P5MON CEA_VR_SPSS2 CEA_VR_SPST1 along with the selected sample rate are displayed in the Selected Parameters field.	
89.	Click on the '**AM1_CEA_V**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
90.	Select **'AM1_CEF_N'** toggle button in the Subsystem text area.	A list of mnemonics associated with AM1_CEF_N are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

91.	Select: **'CEF_NR_BRPOS'** **'CEF_NR_LWF_2'** **'CEF_NR_SWCSMON'** in the available parameters text area. Select a sample rate. Enter into the 'Nth sample' field: **5** Click the 'Select' button.	Mnemonics: CEF_NR_BRPOS CEF_NR_LWF_2 CEF_NR_SWCSMON along with the selected sample rate are displayed in the Selected Parameters field.	
92.	Click on the '**AM1_CEF_N**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
93.	Click on the '**AM1_COM_B**' toggle button.	A list of mnemonics associated with AM1_COM_B are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
94.	Select **'COM_BR_SBT2_PN_LOCK'** in the available parameters text area. Select a sample rate. Enter into the 'Nth sample' field: **5** Click the 'Select' button.	COM_BR_SBT2_PN_LOCK along with the selected sample rate are displayed in the Selected Parameters field.	
95.	Click on the '**AM1_COM_B**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	

96.	Select **'AM1_FS1_N'** toggle button in the Subsystem text area.	A list of mnemonics associated with AM1_FS1_N are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
97.	Select: **'FS1_NR_ACQ_MODE11'** **'FS1_NR_ACQ_MODE23'** **'FS1_NR_ESAOUT_H2F'** **'FS1_NR_IRU_CNG1_R2'** **'FS1_NR_IRU_CNG2_Y2'** in the available parameters text area. Select a sample rate. Enter into the 'Nth sample' field: **10** Click the 'Select' button.	Mnemonics: FS1_NR_ACQ_MODE11 FS1_NR_ACQ_MODE23 FS1_NR_ESAOUT_H2F FS1_NR_IRU_CNG1_R2 FS1_NR_IRU_CNG2_Y2 along with the selected sample rate are displayed in the Selected Parameters field.	
98.	Click on the '**AM1_FS1_N**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
99.	Click on the '**AM1_GNC_S**' toggle button.	A list of mnemonics associated with AM1_GNC_S are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

100.	Select **'GNC_SR_FIN_PTCHERR1'** in the available parameters text area. Select a sample rate. Enter into the 'Nth sample' field: **10** Click the 'Select' button.	GNC_SR_FIN_PTCHERR1 along with the selected sample rate are displayed in the Selected Parameters field.	
101.	Click on the '**AM1_GNC_S**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
102.	Click on the '**AM1_TCS_V**' toggle button.	A list of mnemonics associated with AM1_TCS_V are displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
103.	Select: **'TCS_VR_T_VL2_PMPBUT2'** **'TCS_VR_T_VL1_PMPBUT1'** **'TCS_VR_S_SHUTDN1'** in the available parameters text area. Select a sample rate. Click on the 'All Data' button. Click the 'Select' button.	Mnemonics: TCS_VR_T_VL2_PMPBUT2 TCS_VR_T_VL1_PMPBUT1 TCS_VR_S_SHUTDN1 along with the selected sample rate are displayed in the Selected Parameters field. (TCS_VR_T_VL2_PMPBUT2 will be gone in .02, TCS_VR_T_VL1_PMPBUT1 will have an EU change in .02, TCS_VR_S_SHUTDN1 the EU will be gone in .02)	

104.	Click on the '**AM1_TCS_I**' toggle button.	The list of mnemonics in the Available Parameters text area are removed.	
105.	Click the 'OK' button.	Telemetry points and associated sample rates selected match the Selected Telemetry table in the Analysis Request window.	
106.	**Selecting Start and Stop Times** Click on the 'Select Time' button.	The Selected Pair Times window is displayed.	
107.	Click the 'Select' button	The Pair Time Selector window is displayed.	
108.	Click the 'Absolute' button.	The 'Absolute' button is selected	
109.	Click the 'Time' button.	The 'Time' button is selected	
110.	Click the 'Specify End Time' button.	The 'Specify End Time' button is selected	
111.	Enter into the start date field: **1997/234**	1997/234 is displayed in start date field	
112.	Enter into the start time field: **18:04:22.000**	18:04:22.000 is displayed in start time field	
113.	Enter into the stop date field: **1997/234**	1997/234 is displayed in stop date field	
114.	An error message will appear indicating that the Stop Date must be greater than the Start Date. Click 'Close' in the dialog box.	The dialog box will disappear.	

115.	Enter into the stop time field: **18:09:11.000**	18:09:11.000 is displayed in stop time field	
116.	Enter into the stop date field: **1997/234**	1997/234 is displayed in stop date field	
117.	Click the 'OK' button.	The Selected Pair Times window is displayed.	
118.	Click the 'OK' button.	The selected start and stop times match the Selected Times table in the Analysis Request window.	
119.	**Overriding Automatic Database Selection** Click on the 'Database Selection' box Enter into the text field: **odf.02**	The database used will be using odfs.02	
120.	Click on the output dataset name toggle button. Enter the following file name: **Crossdb1**	The path name /fosb/test/am1/datasets/Crossdb1 will be displayed.	
121.	**Save the analysis request** Click on the File pull down menu.	A list of options appears.	
122.	Select 'Save as…'.	A File Selection window is displayed with a default directory path in the selection field. The default directory path will be /fosb/test/am1/data/FUI/requests/.	

123.	Enter the name of the request: **Crossdb1** Click the 'OK' button.	A dialog box informing the user that the file was saved.	
124.	Click the 'Close' button in the information dialog box.	The dialog box will close.	
125.	Click the 'OK' button in the Analysis Request Builder window.	A dataset for the given options selected has been generated.	
126.	Monitor the time the Event Display received the message Analysis Request **X** has started on Host **N**. Where X = the number of the request and N = the Name of the Host machine that started the request.	Wait for an event message indicating that the analysis request is complete. In the Events Display window, a message will be displayed 'Analysis Request **X** completed on Host **N**.'	
127.	**Bring up Netscape** Place the mouse cursor on the screen background Press the Right most mouse button Select **Netscape 16** Release mouse button	The Netscape display will appear.	
128.	Click on 'Bookmarks'	A pull down menu will appear.	
129.	Select FOS Database Page from the pull down menu.	The FOS Database Home page will appear.	
130.	Select FOS Event History DataBase page.	The FOS Event History Database page will appear.	
131.	At FOS Event Type: Select 'ANA' from the pull down menu.	ANA will appear in the box next to FOS Event Type.	

132.	At FOS Host: Enter the machine name that is running the request.	The machine name entered will appear in the box next to FOS Host.	
133.	Click on 'Submit' button.	An Events History Page will appear.	
134.	Scroll to the bottom of the page and look for an error message indicating that mnemonics TCS_VR_T_VL2_PMPBUT2 and TCS_VR_S_SHUTDN1 are no longer valid.	There will be error messages indicating mnemonics TCS_VR_T_VL2_PMPBUT2 and TCS_VR_S_SHUTDN1 are no longer valid after the cross over.	
135.	Press the little box in the upper right hand corner of the Netscape screen.	Netscape will iconify.	
136.	**Generate and Print a Time Order Downlink Report** Click on 'Tools' from the Control window	The Tools Dialog window is displayed.	
137.	Select 'Report Generator' from the Control window tools menu.	The Report Selector window is displayed.	
138.	Click the 'On Demand' toggle button. Select Spacecraft type 'AM1' Select Report Category 'ANA' Select from Available Reports text area 'Time Order Downlink Report'. Click the 'OK' button	The On Demand Report Selector window is displayed.	
139.	Click 'New'.	The On Demand Reports Specification window is displayed.	

140.	Enter Start Time of report. **234/18:04:22**	The Start Time will appear in the Start Time text area.	
141.	Enter Stop Time of report. **234/18:09:11**	The Stop Time will appear in the Stop Time text area.	
142.	Enter Data Set used. **Crossdb1**	The Crossdb1 will appear in the Data Set text area.	
143.	Click on 'Filter …'button	The Selection Filter window is displayed.	
144.	**Note:** Fields are displayed as the user selects a filter criteria. Select 'AM1' in the Spacecraft text area.	Instruments associated with AM1 are displayed in the Instrument text area	
145.	Select '**EPS**' in the Instrument text area.	Sample Types associated with EPS are displayed in the Sample Type text area	
146.	Select '**T**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_EPS_T is displayed in the Selected text area.	
147.	Select '**V**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_EPS_V is displayed in the Selected text area.	
148.	Select '**TCS**' in the Instrument text area.	Sample Types associated with TCS are displayed in the Sample Type text area	
149.	Select '**V**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_TCS_V is displayed in the Selected text area.	

150.	Click the 'OK' button.	The filter list is displayed in the Analysis Telemetry Selector window in the Subsystems section.	
151.	Click the toggle button for **AM1_EPS_S** in the Selection Filter text area.	A list of associated mnemonics are displayed	
152.	Select **EPS_TR_PBAT_CELL39B** Click the '→' button.	EPS_TR_PBAT_CELL39B is displayed in the Selected text area.	
153.	Click the toggle button for **AM1_EPS_T** in the Selection Filter text area.	A list of associated mnemonics are removed.	
154.	Click the toggle button for **AM1_EPS_V** in the Selection Filter text area.	A list of associated mnemonics are displayed	
155.	Select **EPS_VR_PBAT_CELL53A** Click the '→' button.	EPS_VR_PBAT_CELL53A is displayed in the Selected text area.	
156.	Click the toggle button for **AM1_EPS_V** in the Selection Filter text area.	A list of associated mnemonics are removed.	
157.	Click the toggle button for **AM1_TCS_V** in the Selection Filter text area.	A list of associated mnemonics are displayed	
158.	Select: **TCS_VR_T_VL2_PMPBUT2** **TCS_VR_T_VL1_PMPBUT1** **TCS_VR_S_SHUTDN1** Click the '→' button.	Mnemonics: **TCS_VR_T_VL2_PMPBUT2** **TCS_VR_T_VL1_PMPBUT1** **TCS_VR_S_SHUTDN1** are displayed in the Selected text area.	

159.	Click the toggle button for **AM1_GNC_S** in the Selection Filter text area.	A list of associated mnemonics are removed.	
160.	Click the 'OK' button	The report will generate.	
161.	Via off-line analysis, compare the print out values to the known values of the EU conversions for the mnemonics selected.	TCS_VR_T_VL2_PMPBUT2 will not appear after the crossover. There should be no EU conversion for TCS_VR_S_SHUTDN1 after the crossover. EPS_TR_PBAT_CELL39B will show different limits. TCS_VR_T_VL1_PMPBUT1 will display different EU conversion rate.	
162.	Invoke the Analysis Request Builder_ Click on the 'Tools' button.	The Tools Dialog window and a list of tools is displayed to the user.	
163.	Select 'Analysis_Request_Builder'. Click on 'OK' button.	The Analysis Request Builder window is displayed	
164.	Click the File pull down menu.	A list of options appears.	
165.	Select 'Open'.	The File Selection window is displayed.	
166.	Select '**Template2**'. Click the 'OK' button.	The Analysis Request named Template2 is displayed (Template2 was built a mnemonic that is not in the tlmarchive file.)	
167.	Check the Request Status text area in the Analysis Request Builder window.	The Request Status will indicate Read/Edit Request.	
168.	Click the 'All Data' button	The 'All Data' button will be selected.	

169.	Select an output dataset name for the analysis request. Click the output dataset name toggle button. Enter the name of the output dataset (request name): **Happy_Face**	Happy_Face will be displayed in the Output Dataset Name box.	
170.	Click the 'Graph' toggle button Click the 'Format …' button	Graph format window is displayed	
171.	Select **All** parameters from the Available text area Click the '→' button	The selected parameter will appear in the Selected text area.	
172.	Enter the graph title in the 'Title' box **HappyFaceGraph**	The title will be displayed in the Title text box.	
173.	Select the 'Axes', 'Legend', 'Grid', 'Footer' toggle buttons	The selected toggles button will be selected.	
174.	Select 'Axes' from the Edit pull down menu	Axes will be displayed	
175.	Enter the X Axis Label **'X'**	X will be displayed in the X Axis Label text area.	
176.	Enter the X Axis Parameter **SDU_SCTIME**	SDU_SCTIME will be displayed in the X Axis Parameter Label text area.	
177.	Enter the X Axis Display Interval **'5 sec'**	**5 sec** will be displayed in the X Axis Display Interval text area.	

178.	Enter the X Axis Display Min **'3'**	3 will be displayed in the X Axis Display Min text area.	
179.	Enter the X Axis Display Max **'25'**	25 will be displayed in the X Axis Display Max text area.	
180.	Enter the X Axis Grid Granularity **'.5'**	.5 will be displayed in the X Axis Grid Granularity text area.	
181.	Enter the Y Axis Label **'Y'**	Y will be displayed in the Y Axis Label text area.	
182.	Enter the Y Axis Display Min **'5'**	5 will be displayed in the Y Axis Display Min text area.	
183.	Enter the Y Axis Display Max **'30'**	30 will be displayed in the Y Axis Display Max text area.	
184.	Enter the Y Axis Grid Granularity **'.5'**	.5 will be displayed in the Y Axis Grid Granularity text area.	
185.	Click on 'Apply' button	The desired attributes are saved	
186.	Select 'Legend' from Edit pull down menu	Settings for Legend will be displayed	
187.	Select from the Positional toggle area '**South**'	South toggle button will be selected	
188.	Click on 'Apply' button	The desired attributes are saved	

189.	Select 'Footer' from Edit pull down menu	Settings for Footer will be displayed	
190.	Enter into the Footer text box: **This is a graph called HappyFace.**	The text will appear in the footer text area.	
191.	Select from the Border Type toggle area: '**Shadow**'	Shadow toggle button will be selected.	
192.	Click on 'Apply' button.	The desired attributes are saved.	
193.	Select 'Color and Line Style' from Edit pull down menu.	Settings for Color and Line Style will be displayed.	
194.	Select **TCS_VR_T_VL2_PMPBUT2** in the parameter box.	TCS_VR_T_VL2_PMPBUT2 is highlighted.	
195.	Select from the Line Attributes pull down menu: '**Dotted**'	Dotted will be displayed.	
196.	Select from the Point Attributes pull down menu: '**Circle**'	Circle will be displayed.	
197.	Select from the Color Attributes pull down menu: '**Red**'	Red will be displayed.	
198.	Select from the Limit Line Attributes pull down menu: '**Dotted**'	Dotted will be displayed.	
199.	Click on 'Apply' button.	The desired attributes are applied.	

200.	Select **TCS_VR_S_SHUTDN1** parameter in the parameter box.	TCS_VR_S_SHUTDN1 is highlighted	
201.	Select from the Line Attributes pull down menu: '**Dash**'	Dash will be displayed.	
202.	Select from the Point Attributes pull down menu: '**Square**'	Square will be displayed.	
203.	Select from the Color Attributes pull down menu: '**Yellow**'	Yellow will be displayed.	
204.	Select from the Limit Line Attributes pull down menu: '**Dashed**'	Dashed will be displayed.	
205.	Click on 'Apply' button.	The desired attributes are applied.	
206.	Select **TCS_VR_T_VL1_PMPBUT1** parameter in the parameter box.	TCS_VR_T_VL1_PMPBUT1 is highlighted	
207.	Select from the Line Attributes pull down menu: '**Solid**'	Solid will be displayed.	
208.	Select from the Point Attributes pull down menu: '**Triangle**'	Triangle will be displayed.	
209.	Select from the Color Attributes pull down menu: '**Yellow**'	Yellow will be displayed.	

210.	Select from the Limit Line Attributes pull down menu: '**Solid**'	Solid will be displayed.	
211.	Click on 'Apply' button.	The desired attributes are applied.	
212.	Select **EPS_TR_PBAT_CELL39B** parameter in the parameter box.	EPS_TR_PBAT_CELL39B is highlighted	
213.	Select from the Line Attributes pull down menu: '**Solid**'	Solid will be displayed.	
214.	Select from the Point Attributes pull down menu: '**Triangle**'	Triangle will be displayed.	
215.	Select from the Color Attributes pull down menu: '**Red**'	Red will be displayed.	
216.	Select from the Limit Line Attributes pull down menu: '**Solid**'	Solid will be displayed.	
217.	Click on 'Apply' button.	The desired attributes are applied.	
217.	Click on the 'OK' button.	The Analysis Request Builder window appears.	
218.	**Save the analysis request.** Save the analysis request. Click on the File pull down menu.	A list of options appears.	

219.	Select ‘Save as…’.	A File Selection window is displayed with a default directory path in the selection field. The default directory path will be /fosb/test/am1/data/FUI/requests/.	
220.	Enter the name of the request: **Happy_Face** Click the ‘OK’ button.	A dialog box informing the user that the file was saved.	
221.	Click the ‘Close’ button in the information dialog box.	The dialog box will close.	
222.	Click the ‘OK’ button in the Analysis Request Builder window.	A dataset for the given options selected has been generated.	
223.	Monitor the time the Event Display received the message Analysis Request **X** has started on Host **N**. Where X = the number of the request and N = the Name of the Host machine that started the request.	Wait for an event message indicating that the analysis request is complete. In the Events Display window, a message will be displayed ‘Analysis Request **X** completed on Host **N**.’	
224.	Click on the ‘Tlm Wins’ button.	A list of tlm pages are displayed to the user	
225.	Select ‘Happy_Face Graph’.	Happy_Face Graph page will be displayed. Verify that TCS_VR_T_VL2_PMPBUT2 is not plotted and an message is displayed indicating that it was not found.	
226.	**Bring up Netscape.** Double Click on the Netscape Icon.	The Events History page will be displayed.	
227.	Click on ‘Back’ button on the Netscape tool bar.	The FOS Event History Database page will appear.	

228.	Click on 'Submit' button.	An Events History Page will appear.	
229.	Scroll to the bottom of the page and look for an error message indicating that mnemonics TCS_VR_T_VL2_PMPBUT2 is no longer valid.	There will be error messages indicating mnemonics TCS_VR_T_VL2_PMPBUT2 is no longer valid after the cross over.	
230.	Press the little box in the upper right hand corner of the Netscape screen.	Netscape will iconify.	
231.	Open another X term window. Place the mouse pointer on the screen and activate the pull down Menu by pressing the right most mouse button. Select **Programs** from the pull down menu. Select **Xterm** to bring up a terminal window.	An Xterm window will open.	
232.	Bring up Snapshot window. At the Unix prompt enter: %:**snapshot &**	Snapshot window is displayed.	
233.	Place the pointer in the Snapshot window and click on the snap button. Move the pointer into the Happy_Face_Graph window and click in the window.	A snapshot of the Happy_Face_Graph window is taken.	

234.	Place the pointer on the Print button located in the snapshot window, and press and hold the right most mouse button to activate the Printer Options selection box	The Print Options selection box is displayed. Verify the following options are selected: Printer name is set to: **grapeape** (Ops Lan) **bear** (Support Lan) Orientation is set to: **sideways** Position is set to: **center** Scale is set to: **Both** Make sure Monochrome Printer is not selected	
235.	Click on Print button	The graph will print.	
236.	End of Test.		

System Generation Statistics Test Procedure

Test Case No: ANA-2100B

Test Configuration: See Appendix G

Test Support: Telemetry driver, Previously generated archived files (one file will contain data that crosses over day boundaries and one file that will represent an SSR dump file), SSR Merge utility, FDF Predicts file

Test Dependencies: An SSR Merge must be performed on the database archived files. Telemetry Archive and retrieval; all telemetry formats supported in the archive and within start/stop boundaries of the operational database.

Test Case Description:

This test is designed to verify the ability to automatically build a system generated statistics request and automatically generate a dataset of matching statistics for orbital day, orbital night, daily, monthly (minimum, maximum, mean, and standard deviation) and discrete state changes (total number of discrete state changes, and total time spent in each state) based on archived telemetry data.

The test begins with the initialization of the EOC to support off-line analysis processing. Prior to an SSR Merge, steps will be performed to verify that system generated statistics are not yet executed. An SSR Merge will be done on the archived files. The SSR Merge activates the call to generate system statistics. An Analysis Request is automatically generated. The Reports Selector will be used to select and print out the System Generated Statistics Report. Selected options to the report include request name, parameter names, start/stop times, and interval (i.e. orbit, daily, monthly, mission to date). Steps will be performed to verify that the output of the report will contain the minimum, maximum, mean, and standard deviation of each mnemonic and the total number of state changes and total elapsed time spent in each state for discrete parameters in the dataset. The report is saved, and then printed. The ASCII printouts are analyzed off-line to ensure dataset accuracy and integrity.

Success Criteria:

Via off-line analysis, it is determined that system generated statistic output (minimum, maximum, mean, standard deviation) and the discrete state check parameters (total number of state changes, total elapsed time) match associated dataset content. Statistics computations are accurate and based only on associated start/stop time interval, and data integrity is not compromised during the generation of datasets. The number of samples listed for each statistical computation match the number of samples available in selected start/stop time interval.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	**Start the Data Server.** Reference Test Case SYS-2000B -- FOS Server Startup.	Data Server processes are running.	
2.	**Start the Real-Time Server.** Reference Test Case SYS-2000B -- FOS Server Startup.	Real-Time Server processes are running.	
3.	**Start the User Station.** Reference Test Case SYS-2010B -- User Station Startup and Authentication.	The FOT User Station is running and the 'Control window' is displayed.	
4.	**SSR Merge** Import via copy command or ftp the simulated dump file to **TBD** area.	The SSR Merge is run and system generated statistics is activated.	
5.	**Invoke the Reports Selector** Select 'Reports' from the Control window TOOLS option.	The Reports Selector window is displayed.	

6.	Click 'On Demand' toggle button. Select spacecraft type. Select Report category (ANA).	A list of the available reports will be displayed in the Available Reports text area.	
7.	Select System Generated Statistics from the available reports text area.	The On Demand Report Specification will be displayed.	
8.	Note: The start and stop times shall encompass the times of the files in the archive. Enter Start time of the report: **TBD**	The start time of the report will be displayed.	
9.	Enter Stop time of the report: **TBD**	The stop time of the report will be displayed.	
10.	Select the Interval type from the full down menu. **Orbit Day**	The Interval pull down menu will display the following options: -Orbit Day -Orbit Night -Complete -Daily -Monthly	
11.	Click on the **TBD** in the Selection Filter text area.	A list of associated mnemonics will be displayed in the test area.	

12.	(Analog parameters) Select **TBD** mnemonics in the text area.	The associated mnemonics will be displayed in the Selected text area.	
13.	(State Change parameters - discrete only.) Select **TBD** mnemonics in the text area.	The associated mnemonics will be displayed in the Selected text area.	
14.	Click the 'Apply' button.	The report will generate.	

15.	Click on the 'Printer' toggle button and the report will print.	Via off-line analysis verify the report contains the following information for analog parameters and the values are correct: -Minimum value -Spacecraft time for the minimum value -Maximum value -Spacecraft time for the maximum value -Mean Value -Standard deviation -Number of samples -Via off- line analysis verify the report contains the following information for discrete state change parameters only and the values are correct: -Total number of state changes for each discrete parameter. -Total elapsed time spent in each state for each discrete parameter.	
16.	**Invoke the Reports Selector** Select 'Reports' from the Control window TOOLS option.	The Reports Selector window is displayed.	

17.	Click 'On Demand' toggle button. Select spacecraft type. Select Report category (ANA).	A list of the available reports will be displayed in the Available Reports text area.	
18.	Select System Generated Statistics from the available reports text area.	The On Demand Report Specification will be displayed.	
19.	Enter Start time of the report: **TBD**	The start time of the report will be displayed.	
20.	Enter Stop time of the report: **TBD**	The stop time of the report will be displayed.	
21.	Select the Interval type from the full down menu. **Orbit Night**	The Interval pull down menu will display the following options: -Orbit Day -Orbit Night -Complete -Daily -Monthly	
22.	Click on the **TBD** in the Selection Filter text area.	A list of associated mnemonics will be displayed in the test area.	
23.	(Analog parameters) Select **TBD** mnemonics in the text area.	The associated mnemonics will be displayed in the Selected text area.	

24.	(State Change parameters- discrete only) Select **TBD** mnemonics in the text area.	The associated mnemonics will be displayed in the Selected text area.	
25.	Click the 'Apply' button.	The report will generate.	
26.	Click on the 'Printer' toggle button and the report will print.	Via off-line analysis verify the report contains the following information for analog parameters and the values are correct: -Minimum value -Spacecraft time for the minimum value -Maximum value -Spacecraft time for the maximum value -Mean Value -Standard deviation -Number of samples Via off-line analysis verify the report contains the following information for discrete state change parameters only and the values are correct: Total number of state changes for each discrete parameter. Total elapsed time spent in each state for each discrete parameter.	

27.	**Invoke the Reports Selector** Select 'Reports' from the Control window TOOLS option.	The Reports Selector window is displayed	
28.	Click 'On Demand' toggle button. Select spacecraft type. Select Report category (ANA).	A list of the available reports will be displayed in the Available Reports text area.	
29.	Select System Generated Statistics from the available reports text area.	The On Demand Report Specification will be displayed.	
30.	Enter Start time of the report: **TBD**	The start time of the report will be displayed.	
31.	Enter Stop time of the report: **TBD**	The stop time of the report will be displayed.	
32.	Select the Interval type from the full down menu. **Complete**	The Interval pull down menu will display the following options: -Orbit Day -Orbit Night -Complete -Daily -Monthly	
33.	Click on the **TBD** in the Selection Filter text area.	A list of associated mnemonics will be displayed in the test area.	

34.	(Analog parameters) Select **TBD** mnemonics in the text area.	The associated mnemonics will be displayed in the Selected text area.	
35.	(State Change parameters- discrete only) Select **TBD** mnemonics in the text area.	The associated mnemonics will be displayed in the Selected text area.	
36.	Click the 'Apply' button.	The report will generate.	
37.	Click on the 'Printer' toggle button and the report will print.	Via off-line analysis verify the report contains the following information for analog parameters and the values are correct: -Minimum value -Spacecraft time for the minimum value -Maximum value -Spacecraft time for the maximum value -Mean Value -Standard deviation -Number of samples Via off- line analysis verify the report contains the following information for discrete state change parameters only and the values are correct: Total number of state changes for each discrete parameter. Total elapsed time spent in each state for each discrete parameter.	

38.	**<u>Invoke the Reports Selector</u>** Select 'Reports' from the Control window TOOLS option.	The Reports Selector window is displayed.	
39.	Click 'On Demand' toggle button Select spacecraft type Select Report category (ANA)	A list of the available reports will be displayed in the Available Reports text area.	
40.	Select System Generated Statistics from the available reports text area.	The On Demand Report Specification will be displayed.	
41.	Enter Start time of the report: **TBD**	The start time of the report will be displayed.	
42.	Enter Stop time of the report: **TBD**	The stop time of the report will be displayed.	
43.	Select the Interval type from the full down menu. **Daily**	The Interval pull down menu will display the following options: -Orbit Day -Orbit Night -Complete -Daily -Monthly	
44.	Click on the **TBD** in the Selection Filter text area.	A list of associated mnemonics will be displayed in the test area.	

45.	(Analog parameters) Select **TBD** mnemonics in the text area.	The associated mnemonics will be displayed in the Selected text area.	
46.	(State Change parameters- discrete only) Select **TBD** mnemonics in the text area.	The associated mnemonics will be displayed in the Selected text area.	
47.	Click the 'Apply' button.	The report will generate.	
48.	Click on the 'Printer' toggle button and the report will print.	Via off-line analysis verify the report contains the following information for analog parameters and the values are correct: -Minimum value -Spacecraft time for the minimum value -Maximum value -Spacecraft time for the maximum value -Mean Value -Standard deviation -Number of samples Via off-line analysis verify the report contains the following information for discrete state change parameters only and the values are correct: Total number of state changes for each discrete parameter. Total elapsed time spent in each state for each discrete parameter.	

49.	**Invoke the Reports Selector** Select 'Reports' from the Control window TOOLS option.	The Reports Selector window is displayed.	
50.	Click 'On Demand' toggle button. Select spacecraft type. Select Report category (ANA).	A list of the available reports will be displayed in the Available Reports text area.	
51.	Select System Generated Statistics from the available reports text area.	The On Demand Report Specification will be displayed.	
52.	Enter Start time of the report: **TBD**	The start time of the report will be displayed.	
53.	Enter Stop time of the report: **TBD**	The stop time of the report will be displayed.	
54.	Select the Interval type from the full down menu. **Monthly**	The Interval pull down menu will display the following options: -Orbit Day -Orbit Night -Complete -Daily -Monthly	
55.	Click on the **TBD** in the Selection Filter text area.	A list of associated mnemonics will be displayed in the test area.	

56.	(Analog parameters) Select **TBD** mnemonics in the text area.	The associated mnemonics will be displayed in the Selected text area.	
57.	(State Change parameters- discrete only) Select **TBD** mnemonics in the text area.	The associated mnemonics will be displayed in the Selected text area.	
58.	Click the 'Apply' button.	The report will generate.	
59.	Click on the 'Printer' toggle button and the report will print.	Via off-line analysis verify the report contains the following information for analog parameters and the values are correct: -Minimum value -Spacecraft time for the minimum value -Maximum value -Spacecraft time for the maximum value -Mean Value -Standard deviation -Number of samples Via off-line analysis verify the report contains the following information for discrete state change parameters only and the values are correct: Total number of state changes for each discrete parameter. Total elapsed time spent in each state for each discrete parameter.	

60.	End of test.		

User Specified Statistics Test Procedure

Test Case No: ANA-2110B

Test Configuration: See Appendix G

Test Support: Previously generated Analysis Request to function as a template.

Test Dependencies: Previously generated archived telemetry.

Test Case Description:

This test is designed to verify the ability to build a user-specified statistics request via the combination of user interface and analysis tool options and automatically generate a dataset of matching statistics based on archived telemetry data associated with the user request. The test begins with the initialization of the EOC. The Analysis Request Builder tool is invoked and a user-specified statistics request is generated, with selected options including request name, parameter names, start/stop time, and statistics interval times. The request is saved, and then submitted for dataset generation based on the menu options previously submitted. Reports are generated, printed and analyzed post-test to ensure dataset accuracy and integrity. Following the completion of each request, the request is submitted for dataset generation.

Success Criteria:

This test is considered successful when via post-test analysis, the user request matches the associated dataset content; Statistic computation is accurate and based on the start/stop time interval supplied by the user; The number of samples listed for each statistical computation match the number of samples available in the selected start/stop time; The user is provided with the capability to generate an ASCII report from a user-specified statistics request; The statistics report contains header information consisting of a date and time of the report, a spacecraft start and stop time, and an interval type for the statistic; For each parameter, the statistics report contains a mnemonic name, minimum value, maximum value, mean value, standard deviation, number of samples, and spacecraft time for the minimum and maximum values. Data archive integrity is not compromised during dataset generation.

Step Id	Action	Expected Result/Output	Pass/ Fail

1.	**Start the Data Server**. Reference Test Case SYS-2000B -- FOS Server Startup.	Data Server processes are running.	
2.	**Start the Real-Time Server**. Reference Test Case SYS-2000B -- FOS Server Startup.	Real-Time Server processes are running.	
3.	**Start the User Station**. Reference Test Case SYS-2010B -- User Station Startup and Authentication.	The FOT User Station is running and the 'Control window' is displayed.	
4.	**Invoke the Event Display**. Click on the 'Tools' button.	The Tools Dialog window and a list of tools is displayed to the user.	
5.	Select 'Event_Display_Gobal' from the Control window tools menu. Click on 'OK' button.	The 'Event Display' is displayed on the FOT User Station.	
6.	Click on 'Filter' from the pull down menu. Select 'Event Type'. Click 'Bold' button next to ANL & SYS. Click 'Apply'. Click 'Close'.	The Event_Display_Gobal will now display all ANA subsystem activities in bold.	
7.	**Invoke the Analysis Request Builder**. Click on the 'Tools' button.	The Tools Dialog window and a list of tools is displayed to the user.	

8.	Select 'Analysis_Request_Builder'. Click on 'OK' button.	The Analysis Request Builder window is displayed.	
9.	**Create an Analysis Request** Enter into the request name field: **Myrequest2**	Myrequest2 appears in the Request Name field	
10.	Click on the 'EOC Only' toggle button to select data to be processed in the EOC.	'EOC Only' toggle button should show selected	
11.	Verify that the default data quality is Good Data Only.	The 'Good Data Only' button should show selected	
12.	**Selecting Telemetry Mnemonics** Click on the 'Select Telemetry …' button.	The Telemetry Selector window is displayed.	
13.	Invoke the Selection Filter Screen: Click on the 'Filter…' button.	The Selection Filter Screen is displayed	
14.	**Note:** Fields are displayed as the user selects a filter criteria. Select '**AM1**' in the Spacecraft text area.	Instruments associated with AM1 are displayed in the Instrument text area	
15.	Select '**CDH**' in the Instrument/Subsystem text area.	Sample Types associated with CDH are displayed in the Sample Type text area	
16.	Select '**C**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_C is displayed in the Selected text area.	

17.	Select '**N**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_N is displayed in the Selected text area.	
18.	Select '**S**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_S is displayed in the Selected text area.	
19.	Select '**CEA**' in the Instrument/Subsystem text area.	Sample Types associated with CEA are displayed in the Sample Type text area	
20.	Select '**V**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CEA_V is displayed in the Selected text area.	
21.	Select '**EAS**' in the Instrument/Subsystem text area.	Sample Types associated with EAS are displayed in the Sample Type text area	
22.	Select '**B**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_EAS_B is displayed in the Selected text area.	
23.	Select '**GNC**' in the Instrument/Subsystem text area.	Sample Types associated with GNC are displayed in the Sample Type text area	
24.	Select '**B**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_GNC_B is displayed in the Selected text area.	
25.	Click on the 'OK' button.	The filter list is displayed in the Analysis Telemetry Selector window in the Subsystems section.	
26.	Click on the toggle buttons for '**AM1_CDH_C**'.	A list of mnemonics associated with 'AM1_CDH_C' is displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

27.	Select '**CDH_CR_SSR1_CMDBUS**' in the available parameters text area. Select a statistics rate. Select 'Secs' from the Statistics interval box. Enter in the statistics interval box: **30** Click the 'Select' button.	CDH_CR_SSR1_CMDBUS along with the selected statistics rate are displayed in the Selected Parameters field.	
28.	Click on the toggle buttons for '**AM1_CDH_C**'.	The list of mnemonics in the Available Parameters text area are removed.	
29.	Click on the toggle buttons for '**AM1_CEA_V**'.	A list of mnemonics associated with 'AM1_CEA_V' is displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

30.	Select: **'CEA_VR_NVBMON'** **'CEA_VR_P15VMON'** **'CEA_VR_P5MON'** **'CEA_VR_SPSS2'** **'CEA_VR_SPST1'** in the available parameters text area. Select a statistics rate. Select 'Secs' from the Statistics interval box. Enter in the statistics interval box: **30** Click the 'Select' button.	Mnemonics: CEA_VR_NVBMON CEA_VR_P15VMON CEA_VR_P5MON CEA_VR_SPSS2 CEA_VR_SPST1 along with the selected statistics rate are displayed in the Selected Parameters field.	
31.	Click on the toggle buttons for '**AM1_CEA_V**'.	The list of mnemonics in the Available Parameters text area are removed.	
32.	Click on the toggle buttons for '**AM1_CDH_N**'.	A list of mnemonics associated with 'AM1_CDH_N' is displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

33.	Select: **'CDH_NR_ACT_B_FRCNT'** **'CDH_NR_ACT _NXT_FRSEQ'** **'CDH_NR_SCT_CTCMDREJ'** in the available parameters text area. Select a statistics rate. Select 'Hrs' from the Statistics interval box. Enter in the statistics interval box. **1** Click the 'Select' button.	Mnemonics: CDH_NR_ACT_B_FRCNT CDH_NR_ACT _NXT_FRSEQ CDH_NR_SCT_CTCMDREJ along with the selected statistics rate are displayed in the Selected Parameters field.	
34.	Click on the toggle buttons for '**AM1_CDH_N**'.	The list of mnemonics in the Available Parameters text area are removed.	
35.	Click on the toggle buttons for '**AM1_CDH_S**'.	A list of mnemonics associated with 'AM1_CDH_S' is displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

36.	Select '**CDH_SP_QLTY_4**' in the available parameters text area. Select a statistics rate. Select 'Hrs' from the Statistics interval box. Enter in the statistics interval box: **1** Click the 'Select' button.	CDH_SP_QLTY_4 along with the selected statistics rate are displayed in the Selected Parameters field.	
37.	Click on the toggle buttons for '**AM1_CDH_S**'.	The list of mnemonics in the Available Parameters text area are removed.	
38.	Click on the toggle buttons for '**AM1_EAS_B**'.	A list of mnemonics associated with 'AM1_EAS_B' is displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	

39.	Select: **'EAS_BR_HGA_BOX1A_ARM'** **'EAS_BR_NEA_BUSA'** **'EAS_BR_SA_BOXE1A_ARM'** **'EAS_BR_SA_BOXI2A_ARM'** **'EAS_BR_SA_CAN2A_ARM'** in the available parameters text area. Click on the toggle button in the Statistics interval box. Select 'Min' from the Statistics interval box. Enter in the statistics interval box: **1** Click the 'Select' button.	Mnemonics: EAS_BR_HGA_BOX1A_ARM EAS_BR_NEA_BUSA EAS_BR_SA_BOXE1A_ARM EAS_BR_SA_BOXI2A_ARM EAS_BR_SA_CAN2A_ARM along with the selected statistics rate are displayed in the Selected Parameters field.	
40.	Click on the toggle buttons for '**AM1_EAS_B**'.	The list of mnemonics in the Available Parameters text area are removed.	
41.	Click on the toggle buttons for '**AM1_GNC_B**'.	A list of mnemonics associated with 'AM1_GNC_B' is displayed in the Available Parameters text area of the Analysis Telemetry Selector window.	
42.	In the Find text field enter: **'GNC_BR_SHREPT_CH3'** Click on 'Select' button.	An error dialog box will display a message indicating that this is an invalid mnemonic.	

43.	Click ‘Close’ in the error dialog box.	The dialog box will close.	
44.	Enter the following into the Find text field: **GNC_BR_ESA1_TRL_EDG**	The mnemonic GNC_BR_ESA1_TRL_EDG is now highlighted in the available parameters text area.	
45.	Click on the toggle button in the Statistics interval box. Select ‘Min’ from the Statistics interval box. Enter in the statistics interval box: **1** Click the ‘Select’ button.	GNC_BR_ESA1_TRL_EDG along with the selected statistics rate are displayed in the Selected Parameters field.	
46.	Click on the ‘OK’ button.	Telemetry points and associated sample rates selected match the Selected Telemetry table in the Analysis Request window.	
47.	**<u>Selecting Start and Stop Times</u>** Click on the ‘Select Time’ button.	The Selected Pair Times window is displayed.	
48.	Click the ‘Select’ button.	The Pair Time Selector window is displayed.	
49.	Click on the ‘Absolute’ button.	The ‘Absolute’ button is selected.	
50.	Click on the ‘Time’ button.	The ‘Time’ button is selected.	
51.	Click on the ‘Specify End Time’ button.	The ‘Specify End Time’ button is selected.	

52.	**Note:** The time entered into the Start and Stop fields will reflect 1 day. Enter into the stop time field: **23:59:59.000**	23:59:59.000 is displayed in stop time field.	
53.	Enter into the start time field: **00:00:01.000**	00:00:01.000 is displayed in start time field.	
54.	Enter into the start date field: **1997/234**	1997/234 is displayed in start date field.	
55.	Enter into the stop date field: **1997/234**	1997/234 is displayed in start date field.	
56.	Click on the 'OK' button.	The selected start and stop times match the Selected Times table in the Analysis Request window.	
57.	Select an output dataset name for the analysis request. Click the output dataset name toggle button. Enter the name of the output dataset (request name): **Myrequest2**	Myrequest2 will be displayed in the Output Dataset Name box.	
58.	**Save the analysis request.** Click on the File pull down menu. Select 'Save as…'.	A File Selection window is displayed with a default directory path in the selection field. The default directory path will be /fosb/test/am1/data/FUI/requests/.	

59.	Enter the following at the end of the directory path: **Myrequest2** Click on the 'OK' button.	A dialog box informing the user that the file was saved.	
60.	Click the 'Close' button in the information dialog box.	The dialog box will close.	
61.	Click the 'OK' button in the Analysis Request Builder window.	A dataset for the given options selected has been generated.	
62.	Monitor the Event Display for the amount of time that elapses between the messages reflecting Analysis Request submitted and Analysis Request Started.	Verify the amount of time it takes from the submission of the request to actual start of the request.	
63.	Monitor the time the Event Display received the message Analysis Request **X** has started on Host **N**. Where X = the number of the request and N = the Name of the Host machine that started the request.	Wait for an event message indicating that the analysis request is complete. In the Events Display window, a message will be displayed 'Analysis Request **X** completed on Host **N**.'	
64.	**Print User Specified Statistics Report** Select 'Report Generator' from the Control window tools menu.	The Report Generator window is displayed.	
65.	Click the On-Demand toggle button. Select Spacecraft type 'AM1'. Select Report Category 'ANA'. Select from Available Reports text area 'User Specified Statistics'. Click 'OK' button.	The On-Demand Report Specification window is displayed.	

66.	Enter Start Time: **1997/234 00:00:01.000**	Report Start Time is displayed.	
67.	Enter Stop Time: **1997/234 23:59:59.000**	Report Stop Time is displayed.	
68.	Enter Data Set: **Myrequest2**	Myrequest2 will be displayed in the dataset box.	
69.	Click on 'New Report' button.	The Telemetry Selector window is displayed.	
70.	Select parameters used in the report: Click on 'Filter' button.	The Selection Filter Window is displayed.	
71.	Select the Spacecraft type: '**AM1**'	The instruments associated with AM1 are displayed in the Instruments text area.	
72.	Select '**CDH**' in the Instrument text area.	Sample types associated with CDH are displayed in the Sample Type text Area.	
73.	Select '**C**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_C is displayed in the Selected text area.	
74.	Select '**N**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_N is displayed in the Selected text area.	
75.	Select '**S**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_S is displayed in the Selected text area.	

76.	Select '**CEA**' in the Instrument text area.	Sample types associated with CEA are displayed in the Sample Type text Area.	
77.	Select '**V**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CEA_V is displayed in the Selected text area.	
78.	Select '**EAS**' in the Instrument text area.	Sample types associated with EAS are displayed in the Sample Type text Area.	
79.	Select '**B**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_EAS_B is displayed in the Selected text area.	
80.	Select '**GNC**' in the Instrument text area.	Sample types associated with GNC are displayed in the Sample Type text Area.	
81.	Select '**B**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_GNC_B is displayed in the Selected text area.	
82.	Click on the 'OK' button.	The selected parameters will be displayed in the Selection Filter Area of the On-Demand Report Selector window.	
83.	Click on the '**AM1_CDH_C**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CDH_C are displayed in the text area.	
84.	Select '**CDH_CR_SSR1_CMDBUS**' in the available text area. Click on the → button.	CDH_CR_SSR1_CMDBUS is displayed in the Selected text area.	
85.	Click on the '**AM1_CDH_C**' toggle button.	The list of mnemonics in the available text area are removed.	

86.	Click on the '**AM1_CDH_N**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CDH_N are displayed in the text area.	
87.	Select: **'CDH_NR_ACT_B_FRCNT'** **'CDH_NR_ACT _NXT_FRSEQ'** **'CDH_NR_SCT_CTCMDREJ'** in the available text area. Click on the → button.	Mnemonics: CDH_NR_ACT_B_FRCNT CDH_NR_ACT _NXT_FRSEQ CDH_NR_SCT_CTCMDREJ are displayed in the Selected text area.	
88.	Click on the '**AM1_CDH_N**' toggle button.	The list of mnemonics in the available text area are removed.	
89.	Click on the '**AM1_CDH_S**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CDH_S are displayed in the text area.	
90.	Select '**CDH_SP_QLTY_4**' in the available text area. Click on the → button.	CDH_SP_QLTY_4 is displayed in the Selected text area.	
91.	Click on the '**AM1_CDH_S**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	
92.	Click on the '**AM1_CEA_V**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CEA_V are displayed in the text area.	

93.	Select: **'CEA_VR_NVBMON'** **'CEA_VR_P15VMON'** **'CEA_VR_P5MON'** **'CEA_VR_SPSS2'** **'CEA_VR_SPST1'** in the available text area. Click on the → button.	Mnemonics: CEA_VR_NVBMON CEA_VR_P15VMON CEA_VR_P5MON CEA_VR_SPSS2 CEA_VR_SPST1 are displayed in the Selected text area.	
94.	Click on the '**AM1_CEA_V**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	
95.	Click on the '**AM1_EAS_B**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_EAS_B are displayed in the text area.	
96.	Select: **'EAS_BR_HGA_BOX1A_ARM'** **'EAS_BR_NEA_BUSA'** **'EAS_BR_SA_BOXE1A_ARM'** **'EAS_BR_SA_BOXI2A_ARM'** **'EAS_BR_SA_CAN2A_ARM'** in the available text area. Click on the → button.	Mnemonics: EAS_BR_HGA_BOX1A_ARM EAS_BR_NEA_BUSA EAS_BR_SA_BOXE1A_ARM EAS_BR_SA_BOXI2A_ARM EAS_BR_SA_CAN2A_ARM are displayed in the Selected text area.	

97.	Click on the '**AM1_EAS_B**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	
98.	Click on the '**AM1_GNC_B**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_GNC_B are displayed in the text area.	
99.	Select '**GNC_BR_ESA1_TRL_EDG**' in the available text area. Click on the → button.	GNC_BR_ESA1_TRL_EDG is displayed in the Selected text area.	
100.	Click 'Apply' button.	The report will generate.	
101.	Select 'Report Genreator' from the tools menu in the Control window.	The Report Generator window is displayed.	
102.	Select 'User Stats' from the listing of reports.	The On-Demand Report Specification window is displayed.	
103.	Enter Start Time: **1997/234 00:00:01.000**	Report Start Time is displayed.	
104.	Enter Stop Time: **1997/234 23:59:59.000**	Report Stop Time is displayed.	
105.	Click on 'Retrieve Report'.	A list of available reports will be displayed.	
106.	Select the 'User Specified Statistics'. Click 'Apply' button.	The report will print.	

107.	Retrieve the printout. Via off-line analysis →.	Via off - line analysis verify the User Specified Statistics Report contains: -Date and Time of the report. -Starting spacecraft time of data. -Ending spacecraft time of data. -Interval type of the MMM statistics (if applicable). -Mnemonic name for each telemetry item specified in the report. -Minimum value within each time interval. -Spacecraft time for each minimum value. -Maximum value within each time interval. -Spacecraft time for each maximum value. -Mean value for each time interval. -Standard deviation. -Number of samples within each time interval.	

108.	Via off - line analysis →.	Compare the User Specified Statistics Report with the telemetry files used to create the request to verify: Statistic computations from selected parameters are correct and are based on the time frame allocated by the user. The number of samples listed for each parameter matches the number of available selections, for each parameter, in the time frame given. Spacecraft time associated with the minimum and maximum values is accurate. The time tag includes year, day, hour, minute, second, and millisecond. The data archived is not changed in any way during the generation process. Only good data was retrieved in the analysis request.	
109.	Open another Analysis Request. Click on the 'Tools' button.	The Tools Dialog window and a list of tools is displayed to the user.	
110.	Select 'Analysis_Request_Builder'. Click on 'OK' button.	The Analysis Request Builder window is displayed.	
111.	Click the File pull down menu.	A list of options appears.	
112.	Select 'Open'.	The File Selection window is displayed.	
113.	Select '**Template3**'. Click the 'OK' button.	The Analysis Request named Template is displayed.	

114.	Check the Request Status text area in the Analysis Request Builder window.	The Request Status will indicate Read/Edit Request.	
115.	Enter into the request name field: **Myrequest3**	Myrequest3 appears in the Request Name field.	
116.	Click on the 'Local Only' button to select data to be processed on that particular User Station.	'Local Only' button should show selected.	
117.	Click on 'All Data' button.	The 'All Data' button should show selected.	
118.	Click on the 'OK' button.	Telemetry points and associated sample rates selected match the Selected Telemetry table in the Analysis Request window.	
119.	**Selecting Start and Stop Times** Click on the 'Select Time' button.	The Selected Pair Times window is displayed.	
120.	High light time span to be removed Click the 'Remove' button.	The selected time span will disappear.	
121.	Click the 'Select' button.	The Pair Time Selector window is displayed.	
122.	Click on the 'Absolute' button.	The 'Absolute' button is selected.	
123.	Click on the 'Time' button.	The 'Time' button is selected.	
124.	Click on the 'Specify End Time' button.	The 'Specify End Time' button is selected.	
125.	Enter into the stop date field: **1997/234**	1997/234 is displayed in stop date field.	

126.	Enter into the stop time field: **18:04:26.000**	18:04:26.000 is displayed in stop time field.	
127.	Enter into the start date field: **1997/234**	1997/234 is displayed in start date field.	
128.	Enter into the start time field: **18:04:24.000**	18:04:24.000 is displayed in start time field.	
129.	Click on the 'OK' button.	The selected start and stop times match the Selected Times table in the Analysis Request window.	
130.	Click on the output dataset name toggle button. Enter the following file name: **Myrequest3**	Myrequest2 will be displayed in the Output Dataset Name box.	
131.	**Save the analysis request**. Click on the File pull down menu. Select 'Save as…'.	A File Selection window is displayed with a default directory path in the selection field. The default directory path will be /fosb/test/am1/data/FUI/requests/.	
132.	Enter the following at the end of the directory path: **Myrequest3** Click the 'OK' button.	A dialog box informing the user that the file was saved.	
133.	Click the 'Close' button in the information dialog box.	The dialog box will close.	
134.	Click on the 'OK' button in the Analysis Request Builder window.	A dataset for the given options selected has been generated.	

135.	Monitor the time the Event Display received the message Analysis Request **X** has started on Host **N**. Where X = the number of the request and N = the Name of the Host machine that started the request.	Wait for an event message indicating that the analysis request is complete. In the Events Display window, a message will be displayed 'Analysis Request **X** completed on Host **N**.'	
136.	**Print User Specified Statistics Report** Select 'Report Selector' from the Control window tools menu.	The Report Selector window is displayed.	
137.	Click the On-Demand toggle button. Select Spacecraft type 'AM1'. Select Report Category 'ANA'. Select from Available Reports text area 'Time Ordered Downlink Report'. Click 'OK' button.	The On-Demand Report Specification window is displayed.	
138.	Enter Start Time: **1997/234 18:04:24**	Report Start Time is displayed.	
139.	Enter Stop Time: **1997/234 18:04:26**	Report Stop Time is displayed.	
140.	Enter Data Set: **Myrequest3**	The Dataset to be used to crate the report will be displayed.	
141.	Click on 'New Report' button.	The Telemetry Selector window is displayed.	

142.	Select parameters used in the report: Click on 'Filter' button.	The Selection Filter Window is displayed.	
143.	Select the Spacecraft type: '**AM1**'	The instruments associated with AM1 are displayed in the Instruments text area.	
144.	Select '**CDH**' in the Instrument text area.	Sample types associated with CDH are displayed in the Sample Type text area.	
145.	Select '**C**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_C is displayed in the Selected text area.	
146.	Select '**S**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_CDH_S is displayed in the Selected text area.	
147.	Select '**GNC**' in the Instrument text area.	Sample types associated with GNC are displayed in the Sample Type text Area.	
148.	Select '**B**' in the sample type text area. Click on the 'Select' button.	The subsystem mnemonic AM1_GNC_B is displayed in the Selected text area.	
149.	Select '**SDU**' in the Instrument text area.	Sample types associated with SDU are displayed in the Sample Type text Area.	
150.	Click on the 'OK' button.	The selected parameters will be displayed in the Selection Filter Area of the On-Demand Report Selector window.	
151.	Click on the '**AM1_CDH_C**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CDH_C are displayed in the text area.	

152.	Select '**CDH_CR_SSR1_CMDBUS**' in the available text area. Click on the → button.	CDH_CR_SSR1_CMDBUS is displayed in the Selected text area.	
153.	Click on the '**AM1_CDH_C**' toggle button.	The list of mnemonics in the available text area are removed.	
154.	Click on the '**AM1_CDH_S**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_CDH_S are displayed in the text area.	
155.	Select '**CDH_SP_QLTY_4**' in the available text area. Click on the → button	CDH_SP_QLTY_4 is displayed in the Selected text area.	
156.	Click on the '**AM1_CDH_S**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	
157.	Click on the '**AM1_GNC_B**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_GNC_B are displayed in the text area.	
158.	Select '**GNC_BR_ESA1_TRL_EDG**' in the available text area. Click on the → button.	GNC_BR_ESA1_TRL_EDG is displayed in the Selected text area.	
159.	Click on the '**AM1_GNC_B**' toggle button in the Selection Filter area.	The list of mnemonics in the available text area are removed.	
160.	Click on the '**AM1_SDU**' toggle button in the Selection Filter area.	A list mnemonics associated with AM1_SDU are displayed in the text area.	

161.	Select '**SDU_PACKET_SEQ**' in the available text area. Click on the → button.	SDU_PACKET_SEQ is displayed in the Selected text area.	
162.	Click 'OK' button.	The report will generate.	
163.	Select 'Report Genreator' from the tools menu in the Control window.	The Report Generator window is displayed.	
164.	Select 'Time Order Down Link' from the listing of reports.	The On-Demand Report Specification window is displayed.	
165.	Enter Start Time: **1997/234 18:04:24.000**	Report Start Time is displayed.	
166.	Enter Stop Time: **1997/234 18:04:26.000**	Report Stop Time is displayed.	
167.	Click the 'Printer' button. Click 'OK'.	The desired report will print.	
168.	Retrieve the printout. Via off-line analysis verify →.	Verify that a dataset was generated for one second of data.	
169.	End of test.	Test complete.	

CODA Receipt and Processing Test Procedure

Test Case No: EDOS-2000B

Test Configuration: See Appendix G

Test Support: Powered-up FOS servers, one EOC user station; FOS Server startup scripts; CODA message generator at EDOS (or EDOS to send CODA messages); CODA Report display pages.

Test Case Description:

This test is designed to verify that the EOC can receive, archive, and process real-time CODA reports. Following initialization of FOS servers, the user logs in to an EOC user station, brings up the Event Display, connects to a real-time logical string, and brings up CODA Report display pages. The user logs in to the real-Time Server and invokes the CODA Report generator, which sends valid and invalid CODA reports to the EOC. As the CODA reports are processed, parameter values are automatically updated in the CODA Report display pages. Event messages are generated for invalid CODA Reports. A comparison is made between the CODA Report data generated and displayed. The CODA Report generator is terminated, and the CODA Report archive is checked for the presence of the CODA reports just received.

Success Criteria:

This test is successful when the EOC receives, archives, and processes real-time CODA reports.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	Log in to an EOC user station, using UNIX login procedure, by entering User Name and Password: Username: **<user name>** Password: **********	The login is accepted and two UNIX cmdtool windows appear.	

2.	Execute applicable portions of the 'FOS Server and User Station Startup and Shutdown' test procedure (SYS-2000B) to bring up FOS Data and Real-Time servers and the EOC User Station. *(Wait for initialization of the Data and Real-Time Servers and User Station to complete before going to the next step.)*	The FOS Data and Real-Time Servers are properly initialized. The EOC user station is initialized when the Control window appears.	
3.	Invoke the Global Event Display. In the 'Control window', click on the 'Tools' button. In the 'Tools' menu, select 'Event_Display-Global'.	The 'Tools' menu comes up, then closes. The 'Event Display' comes up.	
4.	Connect to the real-time operational string, by entering the following in the ECL directive line of the Control window: ECL> **STRING CONNECT STRING=100 CONFIG=MIRROR** *(Wait for string connection to complete before going to the next step)*	The following event message appears (after several minutes): 'Successfully connected to string 100'.	
5.	Bring up the CODA Status Blocks and CODA Header display pages. In the 'Control window', click on the 'TlmWins' button. In the 'Tlm Wins' menu, select the applicable CODA display page.	The 'Telemetry Window Selection' menu comes up, then closes. The CODA display page comes up.	

6.	Remotely log in to the Real-Time Server by entering the following in a new cmdtool window: %: **rlogin <Real-Time Server>**	User Station #1 -- A UNIX prompt is received from the Real-Time Server.	
7.	The following steps use the CODA Generator for generating CODA messages. If EDOS is available, some of the following steps might be unnecessary, depending on what EDOS can support.	Information only. No expected result/output.	

8.	Invoke the CODA generator for the transmission of CODA Reports to the EOC. In the same cmdtool window, enter the following: %: **cd /fos/test/am1/scripts/setup (test** is alias) %: **setenv SCRIPT RealTimeServer** %: **source FosEnvVars** %: **cd /fos/test/am1/bin/sun_sparc_5-5 (bin** is alias) %: **EdosCodaGenerator**	The CODA Generator 'Main Menu' comes up. 'Main Menu: 1) Change Message Header 2) Change Coda Report Generator Parameters 3) Reset Sequence Counters 4) Remove Return Link Status Block 5) Remove Forward Link Status Block 6) Add Vcdu Status Block 7) Print Coda Report Message Header 8) Print Coda Report Message 9) Send Coda Report Message Header 10) Send Coda Report Message 11) Send Multiple Coda Report Messages Q) Quit' (Note: This expected result comes from the CODA generator and is NOT an ECS requirement.)	

9.	Change parameters by entering the following option in the 'Main Menu': **2** Set the flag to display the CODA message header in readable format and Return to Main Menu by entering the following options in the 'Parameters Menu': **2** **0**	A 'Parameters Menu' comes up: 'Parameters Menu: 1) Change Update Rate 2) Print Messages With Decom 3) Send Messages Without Test Bit Set 4) Change Coda Sequence Count 0) Return to Main Menu'	
10.	Display the CODA message header by entering the following option in the 'Main Menu': **7**	Header values are displayed in the cmdtool window where the EDOS Coda Generator is running.	
11.	Print the CODA Message Header values just displayed by entering the following in a cmdtool window: %: **snapframe**	Header values are printed.	
12.	Send the CODA message header by entering the following option in the 'Main Menu': **9**	The CODA display page is updated.	
13.	Print the CODA Ground Message Header display page by entering the following in a cmdtool window: %: **snapframe**	The CODA display page is printed. The last two snaps are consistent with each other.	

14.	Display a CODA Report Message (containing Return Link Status Block and Forward Link Status Block, but not VCDU Status Blocks) by entering the following option in the 'Main Menu': **8**	A dump of the CODA report message is displayed in the cmdtool window where the EDOS Coda Generator is running.	
15.	Print the CODA Report Message just displayed by entering the following in a cmdtool window: %: **snapframe**	CODA Report Message values are printed.	
16.	Send the CODA Report Message by entering the following option in the 'Main Menu': **10**	The CODA display page is updated.	
17.	Print the CODA display page by entering the following in a cmdtool window: %: **snapframe**	The CODA display page is printed. The last two snaps are consistent with each other.	
18.	Generate, then display, a CODA Report Message (containing Return Link Status Block, but not Forward Link or VCDU Status Blocks) by entering the following options in the 'Main Menu': **5** **8**	A dump of the CODA report message is displayed in the cmdtool window where the EDOS Coda Generator is running.	
19.	Print the CODA Report Message just displayed by entering the following in a cmdtool window: %: **snapframe**	CODA Report Message values are printed.	

20.	Send the CODA Report Message by entering the following option in the 'Main Menu': **10**	The CODA display page is updated.	
21.	Print the CODA display page by entering the following in a cmdtool window: %: **snapframe**	The CODA display page is printed. The last two snaps are consistent with each other.	
22.	Generate, then display a CODA Report Message (containing Forward Link Status Block, but not Return Link Status Block or VCDU Status Block) by entering the following options in the 'Main Menu': **4** **5** **8**	A dump of the CODA report message is displayed in the cmdtool window where the EDOS Coda Generator is running.	
23.	Print the CODA Report Message just displayed by entering the following in a cmdtool window: %: **snapframe**	CODA Report Message values are printed.	
24.	Send the CODA Report Message by entering the following option in the 'Main Menu': **10**	The CODA display page is updated.	
25.	Print the CODA display page by entering the following in a cmdtool window: %: **snapframe**	The CODA display page is printed. The last two snaps are consistent with each other.	

26.	Generate, then display a CODA Report Message (containing VCDU Status Block, but not Return Link Status Block or Forward Link Status Block) by entering the following option in the 'Main Menu': **5** **6** **8**	A dump of the CODA report message is displayed in the cmdtool window where the EDOS Coda Generator is running.	
27.	Print the CODA Report Message just displayed by entering the following in a cmdtool window: %: **snapframe**	CODA Report Message values are printed.	
28.	Send the CODA Report Message by entering the following option in the 'Main Menu': **10**	The CODA display page is updated.	
29.	Print the CODA display page by entering the following in a cmdtool window: %: **snapframe**	The CODA display page is printed. The last two snaps are consistent with each other.	
30.	Generate, then display, a CODA Report Message (containing Return Link Status Block, Forward Link Status Block, and VCDU Status Block) by entering the following option in the 'Main Menu': **4** **5** **8**	A dump of the CODA report message is displayed in the cmdtool window where the EDOS Coda Generator is running.	

31.	Print the CODA Report Message just displayed by entering the following in a cmdtool window: %: **snapframe**	CODA Report Message values are printed.	
32.	Send the CODA Report Message by entering the following option in the 'Main Menu': **10**	The CODA display page is updated.	
33.	Print the CODA display page by entering the following in a cmdtool window: %: **snapframe**	The CODA display page is printed. The last two snaps are consistent with each other.	
34.	Send two CODA Report Messages (containing Return Link Status Block, Forward Link Status Block, and VCDU Status Block) by entering the following option in the 'Main Menu': **11** **2**	The CODA display page is updated twice.	
35.	Print the CODA display page (after the second CODA Report message is sent) by entering the following in a cmdtool window: %: **snapframe**	The CODA display page is printed. The snap is consistent with the CODA Report messages sent.	

36.	Change Message to Operational by entering the following option in the 'Main Menu': **2** Change Message Type to Operational and Return to Main Menu by entering the following options in the 'Message Header Menu': **3** **0**	A 'Parameters Menu' comes up: The message type is set to 20.	
37.	Display the CODA message header by entering the following option in the 'Main Menu': **7**	Header values are displayed in the cmdtool window where the EDOS Coda Generator is running.	
38.	Display, a CODA Report Message (containing Return Link Status Block, Forward Link Status Block, and VCDU Status Block) by entering the following option in the 'Main Menu': **8**	A dump of the CODA report message is displayed in the cmdtool window where the EDOS Coda Generator is running.	
39.	Print the CODA Report Message by entering the following in a cmdtool window: %: **snapframe**	CODA Report Message values are printed.	
40.	Send the CODA Report Message by entering the following option in the 'Main Menu': **10**	The CODA display page is updated	

41.	Print the CODA display page by entering the following in a cmdtool window: %: **snapframe**	The CODA display page is printed. The last two snaps are consistent with each other.	
42.	Change Message Header by entering the following option in the 'Main Menu': **1** Change Message Type to an invalid number and Return to Main Menu by entering the following options in the 'Message Header Menu': **1** **1** **0**	A 'Message Header Menu' comes up: 'Message Header Menu: 1) Message Type 2) Source Id 3) Destination Id 4) Sequence Number 5) Message Length 0) Return to Main Menu' The message type is set to 1.	
43.	Display the CODA message header by entering the following option in the 'Main Menu': **7**	Header values are displayed in the cmdtool window where the EDOS Coda Generator is running.	
44.	Send the CODA Report Message by entering the following option in the 'Main Menu': **10**	The following event message is displayed: 'The message received was not a CODA or Test CODA report.'	

45.	Change Message Header by entering the following option in the 'Main Menu': **1** Change Message Type to Operational CODA, change Message Sequence Number, and Return to Main Menu by entering the following options in the 'Message Header Menu': **1** **20** **4** **33** **0**	A 'Message Header Menu' comes up: The message type is set to 20. The message sequence number is set to 33.	
46.	Display the CODA message header by entering the following option in the 'Main Menu': **7**	Header values are displayed in the cmdtool window where the EDOS Coda Generator is running.	
47.	Send the CODA Report Message by entering the following option in the 'Main Menu': **10**	The following event message is displayed: 'EDOS message is out of sequence.'	

48.	Change Message Header by entering the following option in the 'Main Menu': **1** Change Message Length and Return to Main Menu by entering the following options in the 'Message Header Menu': **5** **1111** **0**	A 'Message Header Menu' comes up: The message length is set to 1111.	
49.	Display the CODA message header by entering the following option in the 'Main Menu': **7**	Header values are displayed in the cmdtool window where the EDOS Coda Generator is running.	
50.	Send the CODA Report Message by entering the following option in the 'Main Menu': **10**	The following event message is displayed: 'The working buffer offset is out of range for CODA number: XX'	

51.	Change Message Header by entering the following option in the 'Main Menu': **1** Change Source Id and Return to Main Menu by entering the following options in the 'Message Header Menu': **2** **88** **0**	A 'Message Header Menu' comes up: The source Id is set to 88.	
52.	Display the CODA message header by entering the following option in the 'Main Menu': **7**	Header values are displayed in the cmdtool window where the EDOS Coda Generator is running.	
53.	Send the CODA Report Message by entering the following option in the 'Main Menu': **10**	The following event message is displayed: 'Invalid CODA Report received (seq #X): XX is invalid source ID'	
54.	Terminate the CODA Report generator by entering the following: **Q**	The CODA Report generator terminates. (Note: This expected result comes from the CODA Report generator and is NOT an ECS requirement.)	

55.	At the EOC user station, list the CODA Report files archived by entering the following in a cmdtool window: %: **ls -l /fosb/test/am1/tlmarchive** %: **ls --lrt**	A filename corresponding to the date/hour of the CODA Reports received in this test procedure is included among the list of archived CODA Report filenames. The size of the applicable file is non-zero and the time is consistent with the recent CODA messages.	
56.	End of test.		

Test Command Echo Exchange Test Procedure

Test Case No: EDOS-2002B

Test Configuration: See Appendix G

Test Support: Powered-up FOS servers, one EOC user station; FOS Server and EOC user station startup scripts; Command Echo Block (CEB) message generator; tcpdump.

Test Case Description:

This test is designed to verify that the EOC can transmit Command Test Blocks (CTBs) to EDOS, receive corresponding Command Echo Blocks (CEBs) from EDOS, allow the user to specify the timeout value for receipt of CEBs, and generate event messages upon occurrence of a timeout and receipt of CEBs. Following initialization of FOS servers and EOC user station, the user invokes the Event Display and connects to String 100. The user specifies several timeout values via ECL directive. The user remotely logs in to the Real-Time Server and invokes the CEB driver, which emulates EDOS. When the CEB driver is running, a CEB is sent to the EOC for each CTB received by the driver. The tcpdump tool is utilized to monitor CTB and CEB message traffic. An event message is displayed whether or not a CEB is received within the timeout period.

Success Criteria:

This test is successful when the EOC sends CTBs via ECL directive; receives CEBs; allows the user to specify the timeout value for receipt of CEBs; and generates appropriate event messages when timeouts occur and when CEBs are received.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	Log in to an EOC user station, using UNIX login procedure, by entering User Name and Password. Username: <**user name**> Password: ********	The login is accepted and several cmdtool windows appear.	

2.	Execute applicable steps of 'FOS Server and User Station Startup and Shutdown' test procedure (SYS-2000B) procedure to bring up FOS servers and EOC user station.	The FOS servers and User Station are initialized.	
3.	Invoke the Global Event Display. In the 'Control window', click on the 'Tools' button. In the 'Tools' menu, select 'Event_Display-Global'	The 'Tools' menu comes up, then closes. The 'Event Display' comes up.	
4.	Connect mirrored to string 100. Enter the following ECL directive: ECL> **STRING CONNECT STRING=100 CONFIG=MIRROR**	The following event message appears (after several minutes): 'Successfully connected to string 100'.	
5.	Initiate the tcpdump tool to capture outgoing CTB messages. In a new cmdtool window, enter the following: %: **tcpdump -v port 20054**	The following message appears in the cmdtool window: 'listening on le0'	
6.	Attempt to send a Command Test Block (CTB) and set the Command Echo Block (CEB) timeout value to a negative number by entering the following in the ECL directive line of the Control window: ECL> **EDOS COMMTEST TIMEOUT=-5**	A syntax error on the ECL directive is received.	

7.	Attempt to send a Command Test Block (CTB) and set the Command Echo Block (CEB) timeout to a non-numeric character by entering the following in the ECL directive line of the Control window: ECL> **EDOS COMMTEST TIMEOUT=A**	A syntax error on the ECL directive is received.	
8.	Send a Command Test Block (CTB) and set the Command Echo Block (CEB) timeout to the default value (5 seconds) by entering the following in the ECL directive line of the Control window: ECL> **EDOS COMMTEST**	A message in the window where tcpdump is running indicates that a CTB has been sent. The following event message is displayed after 5 seconds: 'EDOS has not sent a Command Echo Block within the timeout limit'.	
9.	Send a CTB and change the CEB timeout value to 15 seconds by entering the following in the ECL directive line of the Control window: ECL> **EDOS COMMTEST TIMEOUT=15**	A message in the window where tcpdump is running indicates that a CTB has been sent. The following event message is displayed after 15 seconds: 'EDOS has not sent a Command Echo Block within the timeout limit'.	
10.	Remotely log in to the Real-Time Server by entering the following in a new cmdtool window: %: **rlogin <Real-Time Server>**	A UNIX prompt is received from the Real-Time Server.	

11.	Invoke the CEB generator for the transmission of a CEB to the EOC by entering the following in the same cmdtool window: %: **cd /fos/test/am1/scripts/setup** (**test** is alias) %: **setenv SCRIPT RealTimeServer** %: **source <FosEnvVars>** %: **cd /fos/test/am1/bin/sun_sparc_5-5** (**bin** is alias) %: **EdosEchoDriver**	The 'EdosEchoDriver' tool is ready to respond to CTBs.	
12.	Send a CTB and change the CEB timeout value to 60 seconds by entering the following in the ECL directive line of the Control window: ECL> **EDOS COMMTEST TIMEOUT=60**	A message in the window where tcpdump is running indicates that a CTB has been sent. A message in the window where tcpdump is running indicates that a CEB has been received. The following event message is displayed: 'Command Echo Block received from EDOS'.	
13.	Send a CTB and change the timeout value to the default value (5 seconds) by entering the following in the ECL directive line of the Control window: ECL> **EDOS COMMTEST**	A message in the window where tcpdump is running indicates that a CTB has been sent. A message in the window where tcpdump is running indicates that a CEB has been received. The following event message is displayed: 'Command Echo Block received from EDOS'.	

14.	Send a CTB and change the timeout value to 30 seconds by entering the following in the ECL directive line of the Control window: ECL> **EDOS COMMTEST TIMEOUT=30**	A message in the window where tcpdump is running indicates that a CTB has been sent. A message in the window where tcpdump is running indicates that a CEB has been received. The following event message is displayed: 'Command Echo Block received from EDOS'.	
15.	In the window containing the 'EdosEchoDriver', depress the following two keys simultaneously: Ctrl C	The 'EdosEchoDriver' tool quits, and a UNIX prompt is received from the Real-Time Server.	
16.	Exit from the Real-Time Server by entering the following in the same cmdtool window. %: **exit**	A UNIX prompt is received from the User Station.	
17.	Send a Command Test Block (CTB) and set the Command Echo Block (CEB) timeout to the default value (5 seconds) by entering the following in the ECL directive line of the Control window: ECL> **EDOS COMMTEST**	A message in the window where tcpdump is running indicates that a CTB has been sent. The following event message is displayed after 5 seconds: 'EDOS has not sent a Command Echo Block within the timeout limit'.	
18.	In the window containing tcpdump, depress the following two keys simultaneously: Ctrl C	The 'tcpdump' tool quits, and a UNIX prompt is received from the user station.	
19.	End of test.		

SCS Summary Report Processing Test Procedure

Test Case No: EDOS-2010B

Test Configuration: See Appendix G

Test Support: Powered-up FOS servers, one EOC user station, and one workstation that emulates EDOS; FOS Server and User Station startup scripts; valid and invalid Spacecraft Contact Session (SCS) Summary Report binary data and associated signal file in EDOS.

Test Case Description:

This test is designed to verify that the EOC can receive SCS Summary Report binary data from EDOS, archive these data, convert them to ASCII format, and generate a formatted report. Following initialization of the FOS Data Server and EOC user station, the user brings up the Event Display. The user logs in to an emulated EDOS workstation and accesses valid and invalid SCS Summary Report binary data files. These files and their associated signal file are sent from EDOS to the EOC via FTP. Event messages appear on the EOC user station indicating receipt of these data.. A comparison is made among the SCS Summary Report binary data sent by EDOS and archived by the EOC. These data are archived at the EOC, and the valid data are processed into ASCII format. Event messages indicating processing status are generated, and the ASCII data are stored.

The user then invokes the Report Generator tool to display the ASCII data as a formatted report. This tool is also used to generate a formatted report using archived SCS Summary Report binary data as input.

Success Criteria:

This test is successful when the EOC receives and archives SCS Summary Report binary data from EDOS; processes the binary data and converts it to ASCII format; and provides the user with the capability to display formatted reports from the ASCII and binary data.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	Transmit and Process Valid SCS Summary Report test follows.	(No expected result/output; information only.)	

2.	**<u>EOC user station</u>**: Log in to an EOC user station, using UNIX login procedure, by entering User Name and Password. Username: **<user name>** Password: ************	The login is accepted and several cmdtool windows appear.	

3.	**EOC user station** (This step is optional. Use to change the File Watcher cycle time.) Remotely log in to the Data Server, and reset the time interval for EOC search of Trash Buffer data files to 60 seconds by entering the following in a cmdtool window: %: **rlogin <EOC Data Server>** %: **kill -2 FdFwFileWatcher** %: **cd /fosb/test/am1/scripts/setup** (**test** is alias) %: **setenv SCRIPT DataServer** %: **setenv FDFW_TIMEOUT 60** %: **source FosEnvVars** %: **cd /fosb/test/am1/bin/sun_sparc_5-5** (**bin** is alias) %: **FdFwFileWatcher &** %: **ps -ax** %: **exit**	The remote login to the Data Server is successful, and a UNIX prompt is received from the EOC Data Server. The FdFwFileWatcher process terminates. The FdFwFileWatcher process is included in the list of active processes. A UNIX prompt is received from the EOC User Station.	
4.	**EOC user station**: Execute applicable steps of 'FOS Server and User Station Startup and Shutdown' test procedure (SYS-2000B) procedure to bring up the Data Server and EOC user station	The Data Server and User Station are initialized.	

5.	**EOC user station**: Invoke the Global Event Display. In the 'Control window', click on the 'Tools' button. In the 'Tools' menu, select 'Event_Display-Global'	The 'Tools' menu comes up, then closes. The 'Event Display' comes up.	
6.	**EDOS workstation**: Log in to the EDOS workstation, using UNIX login procedure, by entering User Name and Password Username: **istuser** Password: ************	The login is accepted and several cmdtool windows appear.	
7.	**EDOS workstation**: From a cmdtool window, access the directory and file containing the SCS Summary Report binary data %: **cd /data/home_dir/istuser/summaryout** %: **ls -l** Note the size of the applicable files to be sent to the EOC.	The directory containing the files to be sent is displayed.	

8.	**EDOS workstation**: In the same cmdtool window, establish an FTP connection with the EOC server %: ftp **<EOC Data Server>** Name: **fostestX** Password: **********	An 'ftp' prompt appears on the EDOS workstation.	
9.	**EDOS workstation**: Send **valid** SCS Summary Report binary data file to the EOC via FTP. In the same cmdtool window, initiate an FTP 'put' command to send the SCS Summary Report binary data file to the EOC: ftp> **cd /fosb/test/am1/external/edos/summary** ftp> **bin** ftp> **put S042WSG97108184438.CSR** *(Wait for completion of file transfer.)*	Message appears on the EDOS workstation indicating that the transfer is complete.	

10.	**<u>EDOS workstation</u>**: Send a 'signal file' (indicating completion of SCS Summary Report binary data file transfer) to the EOC via FTP. In the same cmdtool window, initiate a FTP 'put' command to send the 'signal file' to the EOC. ftp> **put S042WSG97108184438.CSR.XFR** *(Wait for completion of file transfer.)*	**<u>EDOS workstation</u>**: Message appears on the EDOS workstation indicating that the transfer is complete. **<u>EOC user station</u>**: The following messages appear on the Event Display: A message indicating SCS Summary Report data has been received; "FaCsReportMonitor processing Spacecraft Contact Session report <filename>." "FaCsReportMonitor successfully processed Spacecraft Contact Session report <filename>."	
11.	**Transmit Invalid SCS Summary Report test follows**	(No expected result/output; information only.)	
12.	**<u>EDOS workstation</u>**: Send **invalid** SCS Summary Report binary data file with to the EOC via FTP. In the same cmdtool window, initiate an FTP 'put' command to send the SCS Summary Report data file to the EOC: ftp> **put S042WSG97222120000.CSR** *(Wait for completion of file transfer.)*	Message appears on the EDOS workstation indicating that the transfer is complete.	

13.	**EDOS workstation**: Send a 'signal file' (indicating completion of SCS Summary Report data file transfer) to the EOC using FTP. In the same cmdtool window, initiate a FTP 'put' command to send the 'signal file' to the EOC. ftp> **put S042WSG97222120000.CSR.XFR** *(Wait for completion of file transfer)*	**EDOS workstation**: Message appears on the EDOS workstation indicating that the transfer is complete. **EOC user station**: The following messages appear on the Event Display: A message indicating SCS Summary Report data has been received: '"aCsReportMonitor processing Spacecraft Contact Session report S042WSG97222120000.CSR" "FaCsReportMonitor failed processing Spacecraft Contact Session report S042WSG97222120000.CSR: <reason>"	
14.	**EDOS workstation**: Terminate the FTP session by entering the following in the same cmdtool window:. ftp> **quit**	A UNIX prompt (%) appears in the cmdtool window.	
15.	**EDOS workstation**: Display the directory containing the SCS Summary Report binary data files by entering the following in the same cmdtool window: %: **ls -l** Note the size and time of the applicable file.	The valid SCS Summary Report binary data files just sent is included in the files archived listing The size of the valid file and the date/time are consistent with the file transfer	

16.	**EDOS workstation**: Represent the contents of the **valid** EDOS SCS Summary Report binary data file in hexidecimal by entering the following in the same cmdtool window: %: **od -x S042WSG97108184438.CSR**	Valid SCS Summary Report binary data file is displayed as a hexidecimal dump.	
17.	**EDOS workstation**: Represent the contents of the **invalid** EDOS SCS Summary Report binary data file in hexidecimal and save it in a temporary file by entering the following in the same cmdtool window: %: **od -x S042WSG97222120000.CSR**	Invalid SCS Summary Report binary data file is displayed as a hexidecimal dump.	
18.	**EOC user station**: List the SCS Summary Report binary data files archived by entering the following in a cmdtool window: %: **cd /fosb/test/am1/scsbinary** %: **ls -l** Note the filename and time of the applicable file.	The SCS Summary Report binary data files are included in the directory listing. The size of the applicable files and the date/time are consistent with the file transfers.	
19.	**EOC user station**: Represent the contents of the **valid** EOC SCS Summary Report binary data file in hexidecimal by entering the following in the same cmdtool window: %: **od -x S042WSG97108184438.CSR**	Valid SCS Summary Report binary data file contents are displayed as a hexidecimal dump.	

20.	**EOC user station**: Print the hexidecimal dump by entering the following in a cmdtool window: %: **snapframe**	Valid SCS Summary Report hexidecimal dump is printed.	
21.	**EOC user station**: Represent the contents of the **invalid** EOC SCS Summary Report binary data file in hexidecimal by entering the following in the same cmdtool window: %: **od -x S042WSG97222120000.CSR**	Invalid SCS Summary Report binary data file is displayed as a hexidecimal dump.	
22.	**EOC user station**: Print the hexidecimal dump by entering the following in a cmdtool window: %: **snapframe**	Invalid SCS Summary Report hexidecimal dump is printed.	
23.	Compare the contents of the EOC SCS Summary Report data file with the contents of the EDOS SCS Summary Report data file.	The EOC and EDOS SCS Summary Report data file contents are identical.	
24.	**Display SCS Summary Report test follows.**	(No expected result/output; information only.)	
25.	**EOC user station**: Invoke the Global Event Display. In the ‘Control window’, click on the ‘Tools’ button. In the ‘Tools’ menu, select ‘Report_Generator’.	The ‘Tools’ menu comes up, then closes. The ‘Report Generator’ window comes up.	

26.	**EOC user station**: In the Report Selector window, specify the following: Report Type: **Periodic** Spacecraft: **AM1** Report Category: **ANA** Available Reports: **Spacecraft Contact Session Summary (Periodic)** Click on 'Apply'	The 'Periodic Report Selector' window comes up.	
27.	**EOC user station**: In the 'Periodic Report Selector' window, specify the following: Start Time: **YYYY/DDD HH:MM:SS.mmm** Stop Time: **YYYY/DDD HH:MM:SS.mmm** (Note: Specify times that include the SCS Summary Report processed earlier as a result of file transfer from EDOS.) Report Output Options: **Browser** Click on 'Retrieve Report' Click on 'Apply'.	A list of SCS Summary Report ASCII data files is displayed in the large box in the same window.	

28.	**EOC user station**: In the 'Periodic Report Selector' window, select the filename with the time corresponding to the SCS Summary Report ASCII data file generated previously. Click on 'OK'.	The 'Periodic Report Selector' window closes. The SCS Summary Report ASCII data file appears on the screen.	
29.	**EOC user station**: Print the formatted SCS Summary Report just displayed by entering the following in a cmdtool window: %: **snapframe**	The formatted SCS Summary Report is printed.	
30.	**EOC user station**: In the Report Selector window, specify the following: Report Type: **On Demand** Spacecraft: **AM1** Report Category: **ANA** Available Reports: **Spacecraft Contact Session Summary (On Demand)** Click on 'OK'.	The 'Report Selector' window closes. The 'On_Demand Report Selector' window comes up.	

31.	**EOC user station**: In the 'On-Demand Report Selector' window, specify the following: Click on 'New Report'	The 'On_Demand Report Specification' window comes up.	
32.	**EOC user station**: In the 'On-Demand Report Specification' window, specify the following: Directory: **/fosb/test/am1/external/edos/summary** File: **S042WSG97108184438.CSR** Click on 'OK'.	The 'On-Demand Report Specification' window closes. A dialog box appears with the message 'Spacecraft Contact Session Report Generating'. The following messages appear in the Event Display: 'FaCsReport Monitor processing Spacecraft Contact Session report S042WSG97108184438.CSR'; 'FaCsReport Monitor successfully processed Spacecraft Contact Session report S042WSG97108184438.CSR'	
33.	**EOC user station**: List the SCS Summary Report ASCII files by entering the following in a cmdtool window: %: **cd /fosb/test/am1/reports/scs** %: **ls -l** Note the size and time of the applicable file.	The SCS Summary Report ASCII data file just generated is included in the directory listing. The size of this file and the date/time are consistent with file generation.	

34.	**EOC user station**: In the 'On-Demand Report Selector' window, specify the following: Start Time: **YYYY/DDD HH:MM:SS.mmm** Stop Time: **YYYY/DDD HH:MM:SS.mmm** (Note: Specify times that include the SCS Summary Report just processed as a result of user request.) Report Output Options: **Printer** Click on 'Retrieve Report' Click on 'OK'.	A list of SCS Summary Report ASCII data files is displayed in the large box in the same window.	
35.	**EOC user station**: In the 'On-Demand Report Selector' window, select the file with the time corresponding to the SCS Summary Report ASCII data file generated as a result of user request. Click on 'OK'.	The 'On-Demand Report Selector' window closes. The SCS Summary Report ASCII data file is printed.	
36.	**EOC user station**: Compare the two reports generated via the Report Generator.	The information generated via the Report Generator are consistent with each other.	
37.	End of test.		

Receive and Forward Trash Buffer Data Test Procedure

Test Case No: EDOS-2030B

Test Configuration: See Appendix G

Test Support: Powered-up FOS Data Server, one EOC user station, and one workstation that emulates EDOS, SAS, and the SDVF (SDF IST/FSTB); FOS Data Server and User Station startup scripts; emulated Trash Buffer data and associated signal file in EDOS.

Test Case Description:

This test is designed to verify that the EOC can receive Trash Buffer data from EDOS, archive these data, and send the data to SAS and SDVF (SDF IST/FSTB). Following initialization of the FOS Data Server and EOC user station, the user brings up the Event Display. The user logs in to an emulated EDOS and accesses the Trash Buffer data file. The Trash Buffer data file and its associated signal file is sent from EDOS to the EOC via FTP. An event message appears on the EOC user station indicating receipt of these data, which are automatically archived at the EOC. The user accesses the Trash Buffer data file just archived and sends it to the SAS and SDVF (SDF IST/FSTB) workstation via FTP.

Success Criteria:

This test is successful when the EOC displays an event message upon receipt of Trash Buffer data; archives these data; and provides the capability to list Trash Buffer data files and transfer them to the SAS and SDVF (SDF IST/FSTB).

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	**Receive and Archive Trash Buffer Data test follows.**	(No expected result/output; information only.)	

2.	**<u>EOC user station</u>**: Log in to an EOC user station, using UNIX login procedure, by entering User Name and Password Username: **<fostestX>** Password: ************	The login is accepted and several cmdtool windows appear	

3.	**EOC user station** (This step is optional.) Reset the time interval for EOC search of Trash Buffer data files to 60 seconds. Remotely log in to the Data Server by entering the following in a cmdtool window: %: **rlogin <EOC Data Server>** %: **kill -2 FdFwFileWatcher** %: **cd /fosb/test/am1/scripts/setup** (**test** is alias) %: **setenv SCRIPT DataServer** %: **setenv FDFW_TIMEOUT 60** %: **source FosEnvVars** %: **cd /fosb/test/am1/bin/sun_sparc_5-5** (**bin** is alias) %: **FdFwFileWatcher &** %: **ps -ax** %: **exit**	The remote login to the Data Server is successful, and a UNIX prompt is received from the EOC Data Server. The FdFwFileWatcher process terminates. The FdFwFileWatcher process is included in the list of active processes. A UNIX prompt is received from the EOC User Station.	
4.	**EOC user station**: Execute applicable steps of 'FOS Server and User Station Startup and Shutdown' test procedure (SYS-2000B) procedure to bring up the Data Server and EOC user station	The Data Server and User Station are initialized.	

5.	**EOC user station**: Invoke the Global Event Display. In the 'Control window', click on the 'Tools' button. In the 'Tools' menu, select 'Event_Display-Global'	The 'Tools' menu comes up, then closes. The 'Event Display' comes up.	
6.	**EDOS workstation**: Log in to the EDOS workstation, using UNIX login procedure, by entering User Name and Password. Username: **istuser** Password: **********	The login is accepted and several cmdtool windows appear.	
7.	**EDOS workstation**: From a cmdtool window, access the directory and file containing the Trash Buffer data. %: **cd /data/home_dir/istuser/trashout** %: **ls -l** Note the size of the applicable file to be sent to the EOC.	The EDOS directory containing the file to be sent is displayed.	
8.	**EDOS workstation**: Display the contents of the EDOS Trash Buffer data file by entering the following in a cmdtool window: %: **cat TWSG9710818443801.TRD**	Trash buffer data file contains the following: 'Test trash buffer data file'	

9.	**EDOS workstation**: In a cmdtool window, establish an FTP connection with the EOC server %: ftp **<EOC Data Server>** Name: **fostestX** Password: **********	An 'ftp' prompt appears on the EDOS workstation	
10.	**EDOS workstation**: Send the Trash Buffer data file to the EOC via FTP. In a cmdtool window, initiate an FTP 'put' command to send the Trash Buffer data file to the EOC: ftp> **cd /fosb/test/am1/external/edos/trash** ftp> **bin** ftp> **put TWSG9710818443801.TRD** *(Wait for completion of file transfer.)*	Message appears on the EDOS workstation indicating that the transfer is complete.	
11.	**EDOS workstation**: Send a 'signal file' (indicating completion of Trash Buffer data file transfer) to the EOC using FTP. In the same cmdtool window at the EDOS workstation, initiate a FTP 'put' command to send the 'signal file' to the EOC. ftp> **put TWSG9710818443801.TRD.XFR** *(Wait for completion of file transfer.)*	**EDOS workstation**: Message appears on the EDOS workstation indicating that the transfer is complete. **EOC user station**: Message appears in the Event Display on the EOC user station indicating Trash Buffer data has been received.	

12.	**EDOS workstation**: Display the directory containing the Trash Buffer data files by entering the following in a cmdtool window: %: **ls -l** Note the size and time of the applicable file.	The Trash Buffer data file just sent by EDOS is included in the files archived listing. The size of this file and the date/time are consistent with the file transfer.	
13.	**EDOS workstation**: Terminate the FTP session. ftp> **quit**	A UNIX prompt (%) appears in the cmdtool window.	
14.	**EOC user station**: List the Trash Buffer data files archived by entering the following in a cmdtool window: %: **cd /fosb/test/am1/reports** %: **ls -l**	The Trash Buffer data file just sent by EDOS is included in the list of files displayed. The size of this file and the date/time are consistent with the recent file transfer.	
15.	**EOC user station**: Display the contents of the EOC Trash Buffer data file by entering the following in the same cmdtool window: %: **cat TWSG9710818443801.TRD**	Trash buffer data file contains the following: 'Test trash buffer data file'.	
16.	**Trash Buffer Data File Transfer test follows.**	(No expected result/output; information only.)	

17.	**<u>EOC user station</u>**: In the same cmdtool window, establish a FTP connection with the SAS/SDVF (SDF IST/FSTB) workstation %: **ftp 198.118.197.200** Name: **istuser** Password: ************	An 'ftp' prompt appears on the EOC user station	
18.	**<u>EOC user station</u>**: Send the Trash Buffer data file to the SAS/SDVF (SDF IST/FSTB) workstation via FTP. In the same cmdtool window, initiate an FTP 'put' command to send the Trash Buffer data file to the SAS/SDVF (SDF IST/FSTB) workstation: ftp> **cd /data/home_dir/istuser/trashin** ftp> **bin** ftp> **put TWSG9710818443801.TRD** *(Wait for completion of file transfer.)*	Message appears on the EOC user station indicating that the transfer is complete.	
19.	**<u>EOC user station:</u>** Display the SAS/SDVF (SDF IST/FSTB) server directory containing the Trash Buffer file just transferred by entering the following in the same cmdtool window: ftp> **ls -l**	The Trash Buffer data file just sent by the EOC is included in the list of files displayed. The size of this file and the date/time are consistent with the file transfer.	

20.	**<u>EOC user station</u>**: Terminate the FTP session. ftp> **quit**	A UNIX prompt (%) appears in the cmdtool window.	
21.	End of test.		

CONT2010B - Decision Support System (DSS)

Test Case No.: CONT2010B

Test Configuration: See Appendix G

Test Support: Telemetry packet driver "packGen" supplying Navigational and Electrical Power Subsystem telemetry data values. UPD and CODA simulators for generating simulated data from the NCC and EDOS respectively TBD. Telemetry mnemonics describing the ADAC and the EPS, with some of the values flagged as bad to show poor quality telemetry and some read as static to show data dropout. DSS (Decision Support System) software to monitor the health and safety of the AM-1 S/C.

Test Case Description: This test consists of a series of three subtest blocks.

The first subtest block consist of two subtest related to telemetry data error handling including data dropout, and telemetry data that is flagged as bad.

The second subtest block consist of eight subtest related to the Attitude Determination and Control (ADAC) subsystem. The initial conditions of all of the subtest in this subtest block will be stable, SafeHold mode for the spacecraft (S/C) either in orbital day or S/C night as specified. The first two subtests in the block test to see if the DSS detects specific Earth Pointing submode configurations within the Earth Pointing submode of SafeHold for both orbital day and S/C night, respectively. Subtests three and four in the block test to see if the DSS detects specific Sun Pointing submode configurations within the Sun Pointing submode of SafeHold for both orbital day and S/C night, respectively. Subtests five and six in the block test to see if the DSS detects specific Inertial Pointing submode configurations within the Inertial Pointing submode of SafeHold for both orbital day and S/C night, respectively. Subtest seven in the block test to see if the DSS detects Attitude Control Electronics (ACE) misconfiguration in SafeHold for orbital day. And finally, subtest eight in the block test to see if the DSS detects excessive attitude errors for any of the three submodes in SafeHold.

The third subtest block consist of three subtest related to the Electrical Power Subsystem (EPS). The first subtest in the block test to see if the DSS detects a Solar Array Drive (SAD) failure in SafeHold. The second subtest in the block test to see if the DSS detects a Command Decoder failure in SafeHold. The third and final subtest in the block test to see if the DSS detects a SAD/ACE misconfiguration in SafeHold.

Following sign-on, the events display page is brought up, packGen is brought on line. Then DSS is brought up. UPD's and CODA's are generated TBD. Tests are run to see the effect of data dropout and flagged telemetry on DSS. Changing mnemonics are supplied during the tests that affect the ADAC and EPS and are reflected by DSS. The DSS software is expected to respond correctly as defined in the tests to the changing telemetry as well as UPD's TBD and CODA's TBD. Logs and snaps are printed during the tests for off-line analysis.

Success Criteria: This test is considered successful if all of the subtest within the three subtest blocks is considered successful.

The first subtest block is considered successful when the DSS detects telemetry data dropout from UPD data or CODA data. The DSS will stop all health and safety monitoring at this point until telemetry quality is again considered reliable.

The second subtest block is considered successful if the DSS detects and recognizes all of the intermediate and final submode configurations for subtests one through six, and if the DSS detects and recognizes ACE misconfigurations (specifically from position sensor selects configuration) for subtest seven, and if the DSS detects and recognizes excessive attitude errors within each of the three submode for SafeHold (specifically from Coarse Sun Sensor (CSS) data, gyro rate data, and Earth Sensor data) for subtest eight.

The third subtest block is considered successful if the DSS detects and recognizes SAD related failures (specifically from SA position data, SA voltage and current data, and battery voltage data) for subtest one, and if the DSS detects and recognizes command decoder related failures (specifically from V/T level data, and battery charge rate data) for subtest two, and if the DSS detects and recognizes a SAD/ACE misconfiguration for subtest three.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	Log onto a EOC workstation. Start the Data Server. Reference Test Case SYS2000B—FOS Server Startup	Data Server processes are running.	
2.	Start the Real-Time Server. Reference Test Case SYS2000B—FOS Server Startup	Real Time Server processes are running.	
3.	Log onto an FOT User Station. Start the User Station. Reference test case SYS2010B—User Station Startup and Authentication.	The FOT User Station is running and the ‘Control window’ is displayed.	

4.	Click the mouse on the "Tools" button in the Control window.	The "Tool Selection" Dialog Box will appear on the screen.	
5.	Select "Events_Display_Global" from the Control window tools menu.	The "Event_Display_Global" window becomes highlighted and appear in the selection box.	
6.	Click the mouse on the "OK" button below the selection box.	The "Event Display" page appears on the screen.	
7.	Connect to a real-time operational string, to accept Housekeeping data, by entering the following in the ECL directive line of the Control window: ECL>**STRING CONNECT STRING=100 CONFIG= MIRROR**	The following message will appear in the Event Display window: **"**Successfully connected to string 100".	
8.	Start FaRtDServer: ECL> **EA ENABLE STRING=100**	Wait for successful RTworks startup.	
9.	Invoke the EDOS telemetry driver for the multicast of Housekeeping telemetry packets for processing. In a new terminal window, enter the following: %:**cd /fos/test/am1/scripts/setup** **%: setenv SCRIPT UserStation** %: **source FosEnvVars** %:**cd /fos/test/am1/bin/sun_sparc_5-5** %: **FtPgPackGen**	The message "Packet Generator is ready to receive directives" should appear in the x-term window.	

10.	To start the telemetry driver, enter the following in the ECL directive line of the Control window: ECL> **PG CONFIG HOST=225.2.7.000 PORT=20101 APID=1**		
11.	Change to script setup directory. %: **:cd /fosb/test/am1/scripts/setup**		
12.	Start RTworks inference engine process in the background using the startup script. %: **:source DssStartUps**	The RTie interface comes up and will already be in run mode(it takes a couple of minutes to initialize). The initialization is complete when the time field in the middle section of the display is updating.	
13.	After all processes are running look at the DSS displays.	DSS should be able to handle the data dropout.	
14.	The RTworks message window display should indicate data dropout. Take a snap of the display. %: **snap**		
15.	Start flagged data flowing from packGen.	Mnemonics will be flagged with a Q to indicate poor quality data.	
16.	The RTworks message window display should indicate poor telemetry quality detection. Take a snap of the display. %: **snap**		
17.	Change the telemetry coming from packGen.	Use the mnemonics in TABLE CONT2010B-24 column 0. They represent simulation of the solar arrays rotating at the rate of 1 omega (***TBD in packGen***). Wait ?? seconds before using telemetry.	

18.	View the RTworks message window displays. Take a snap of the displays. %: **snap**	To verify that the solar array is rotating at the rate of 1 omega, check the RTworks message window for messages. Verify that the mnemonic AM1_EPS_VR_SA_POSITION_A is incrementing by 3.64 degrees per minute in the RTworks message window.	
19.	Start good telemetry flowing from packGen. ECL> **START CONT2010B010**	Use the mnemonics in TABLE CONT2010B-1 column 0. They represent the configuration of a stable, Earth pointing submode SafeHold in orbital day. Safehold is currently off.	
20.	Start good telemetry flowing from packGen. ECL> **PG STARTDATA APID=1 COUNT=-1**	Start sending telemetry data to DSS.	
21.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. This is the initial baseline state of the S/C for subtest one of the ADAC subtest block.	
22.	View the RTworks message window displays.	DSS should indicate that the S/C is in Earth pointing submode, in orbital day, and in stable SafeHold mode. Verify this by checking for the following messages, "SHM ADAC submode is earth_pointing on ACE A", "SHM EPS day detected", and "SHM stability check passed".	
23.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics from TABLE CONT2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
24.	View the RTworks message window display.	DSS should indicate a "SHM off" message.	
25.	Change the telemetry coming from packGen. ECL> **START CONT2010B013**	Use the mnemonics in TABLE CONT2010B-1 column 3. Earth Sensor Assembly (ESA) 1 is selected for both roll and pitch position sensor select.	

26.	Change the telemetry coming from packGen. ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. SafeHold is turned back on.	
27.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital day, and in stable SafeHold mode. To verify that ESA 1 is selected for both roll and pitch position sensor select, check for messages "SHM ADAC ACE submode is Earth Pointing on ACE A" and "Position select, ESA 1 for Roll, ESA 1 for Pitch".	
28.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics from TABLE CONT2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
29.	View the RTworks message window display.	DSS should indicate a "SHM off" message.	
30.	Change the telemetry coming from packGen. ECL> **START CONT2010B014**	Use the mnemonics in TABLE CONT 2010B-1 column 4. Earth Sensor Assembly (ESA) 2 is selected for both roll and pitch position sensor select.	
31.	Change the telemetry coming from packGen. ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. SafeHold is turned back on.	
32.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital day, and in stable SafeHold mode. To verify that ESA 2 is selected for both roll and pitch position sensor select, check for messages "SHM ADAC ACE submode is Earth Pointing on ACE A" and "Position select, ESA 2 for Roll, ESA 2 for Pitch".	
33.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	

34.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
35.	Change the telemetry coming from packGen. ECL> **START CONT2010B021**	Use the mnemonics in TABLE CONT 2010B-2 column 1. ESA 1 is selected for roll position sensor select and ESA 2 is selected for pitch position sensor select.	
36.	Change the telemetry coming from packGen. ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. SafeHold is turned back on.	
37.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital day, and in stable SafeHold mode. To verify that ESA 1 is selected for roll and ESA 2 is selected for pitch position sensor select, check for messages “SHM ADAC ACE submode is Earth Pointing on ACE A” and “Position select, ESA 1 for Roll, ESA 2 for Pitch”.	
38.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
39.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
40.	Change the telemetry coming from packGen. ECL> **START CONT2010B022**	Use the mnemonics in TABLE CONT 2010B-2 column 2. ESA 2 is selected for roll position sensor select and ESA 1 is selected for pitch position sensor select.	
41.	Change the telemetry coming from packGen. ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. SafeHold is turned back on.	

42.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital day, and in stable SafeHold mode. To verify that ESA 2 is selected for roll and ESA 1 is selected for pitch position sensor select, check for messages “SHM ADAC ACE submode is Earth Pointing on ACE A” and “Position select, ESA 2 for Roll, ESA 1 for Pitch”.	
43.	Stop the telemetry drivers by entering the following in the ECL directive line ECL> **PG STOPDATA APID=1**	This ends the first subtest of the ADAC subtest block.	
44.	Repeat all or part of steps 1 through 12 as needed to set up the environment for testing the second subtests of the ADAC test block.		
45.	Change the telemetry coming from packGen. ECL> **START CONT2010B030**	Use the mnemonics in TABLE CONT 2010B-3 column 0. They represent the configuration of a stable, Sun pointing submode SafeHold in orbital night. Safehold is turned off.	
46.	Start good telemetry flowing from packGen. ECL> **PG STARTDATA APID=1 COUNT=-1**	Start sending telemetry data to DSS.	
47.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. This is the initial baseline state of the S/C for subtest two of the ADAC subtest block.	
48.	View the RTworks message window display.	DSS should indicate that the S/C is in Sun pointing submode, in orbital day and in stable SafeHold mode. Verify this by checking for the following messages, “SHM ADAC submode is sun_pointing on ACE A”, “SHM EPS night detected”, and “SHM stability check passed”.	

49.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
50.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
51.	Change the telemetry coming from packGen. ECL> **START CONT2010B031**	Use the mnemonics in TABLE CONT2010B-3 column 1. Coarse Sun Sensor (CSS) 1 is selected for both pitch and yaw position sensor select.	
52.	Change the telemetry coming from packGen. ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. SafeHold is turned back on.	
53.	View the RTworks message window display.	DSS should indicate that the S/C is in Sun pointing submode, in orbital day and in stable SafeHold mode. To verify that CSS 1 is selected for both pitch and yaw position sensor select, check for messages “SHM ADAC ACE submode is Sun Pointing on ACE A” and “Position select, CSS 1 for Pitch, CSS 1 for Yaw”.	
54.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
55.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
56.	Change the telemetry coming from packGen. ECL> **START CONT2010B032**	Use the mnemonics in TABLE CONT2010B-3 column 2. CSS 2 is selected for pitch position sensor select and CSS 1 is selected for yaw position sensor select.	
57.	Change the telemetry coming from packGen. ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. SafeHold is turned back on.	

58.	View the RTworks message window display.	DSS should indicate that the S/C is in Sun pointing submode, in orbital day and in stable SafeHold mode. To verify that CSS 2 is selected for pitch and CSS 1 is selected for yaw position sensor select, check for messages “SHM ADAC ACE submode is Sun Pointing on ACE A” and “Position select, CSS 2 for Pitch, CSS 1 for Yaw”.	
59.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
60.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
61.	Change the telemetry coming from packGen. ECL> **START CONT2010B033**	Use the mnemonics in TABLE CONT2010B-3 column 3. CSS 2 is selected for both pitch and yaw position sensor select.	
62.	Change the telemetry coming from packGen. ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. SafeHold is turned back on.	
63.	View the RTworks message window display.	DSS should indicate that the S/C is in Sun pointing submode, in orbital day and in stable SafeHold mode. To verify that CSS 2 is selected for both pitch and yaw position sensor select, check for messages “SHM ADAC ACE submode is Sun Pointing on ACE A” and “Position select, CSS 2 for Pitch, CSS 2 for Yaw”.	
64.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
65.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	

66.	Stop the telemetry drivers by entering the following in the ECL directive line ECL> **PG STOPDATA APID=1**	This ends the second subtest of the ADAC subtest block.	
67.	Repeat all or part of steps 1 through 12 as needed to set up the environment for testing the third subtests of the ADAC test block.		
68.	Change the telemetry coming from packGen. ECL> **START CONT2010B040**	Use the mnemonics in TABLE CONT 2010B-4 column 0. They represent the configuration of a stable Inertial pointing submode SafeHold in orbital day. Safehold is currently turned off.	
69.	Start good telemetry flowing from packGen. ECL> **PG STARTDATA APID=1 COUNT=-1**	Start sending telemetry data to DSS.	
70.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. This is the initial baseline state of the S/C for subtest three of the ADAC subtest block.	
71.	View the RTworks message window display.	The DSS should indicate the S/C in a stable, Inertial pointing submode SafeHold in orbital day. Verify this by checking for the following messages, “SHM ADAC submode is inertial_pointing on ACE A”, “SHM EPS day detected”, and “SHM stability check passed”.	
72.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
73.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
74.	Change the telemetry coming from packGen. ECL> **START CONT2010B041**	Use the mnemonics in TABLE CONT2010B-4 column 1. Inertial Reference Unit (IRU) 1 is selected for all three axes for rate sensor select.	

75.	Change the telemetry coming from packGen. ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. SafeHold is turned back on.	
76.	View the RTworks message window display.	DSS should indicate that the S/C is in Inertial pointing submode, in orbital day and in stable SafeHold mode. To verify that no position sensor select is selected, check for messages “SHM ADAC ACE submode is inertial_pointing on ACE A”, “SHM ADAC SHDP submode is no position selected on ACE A” and “SHM IRU configuration is, IRU 1 for roll, IRU 1 for pitch, IRU 1 for yaw”.	
77.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
78.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
79.	Change the telemetry coming from packGen. ECL> **START CONT2010B042**	Use the mnemonics in TABLE CONT2010B-4 column 2. IRU 2 is selected for pitch rate sensor select and IRU 1 is selected for roll and yaw rate sensor select.	
80.	Change the telemetry coming from packGen. ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. SafeHold is turned back on.	
81.	View the RTworks message window display.	DSS should indicate that the S/C is in Inertial pointing submode, in orbital day and in stable SafeHold mode. To verify that no position sensor select is selected, check for message “SHM ADAC SHDP submode is no position selected on ACE A”. To verify that IRU 2 is selected for pitch rate sensor select and IRU 1 is selected for roll and yaw rate sensor select, check for message “SHM IRU configuration is, IRU 1 for roll, IRU 2 for pitch, IRU 1 for yaw”.	

82.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
83.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
84.	Change the telemetry coming from packGen. ECL> **START CONT2010B043**	Use the mnemonics in TABLE CONT2010B-4 column 3. IRU 2 is selected for roll and pitch rate sensor select and IRU 1 is selected for yaw rate sensor select.	
85.	Change the telemetry coming from packGen. ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. SafeHold is turned back on.	
86.	View the RTworks message window display.	DSS should indicate that the S/C is in Inertial pointing submode, in orbital day and in stable SafeHold mode. To verify that no position sensor select is selected, check for message “SHM ADAC SHDP submode is no position selected on ACE A”. To verify that IRU 2 is selected for roll and pitch rate sensor select and IRU 1 is selected for yaw rate sensor select, check for message “SHM IRU configuration is, IRU 2 for roll, IRU 2 for pitch, IRU 1 for yaw”.	
87.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
88.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
89.	Change the telemetry coming from packGen. ECL> **START CONT2010B044**	Use the mnemonics in TABLE CONT2010B-4 column 4. IRU 2 is selected for all three axes for rate sensor select.	

90.	Change the telemetry coming from packGen. ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. SafeHold is turned back on.	
91.	View the RTworks message window display.	DSS should indicate that the S/C is in Inertial pointing submode, in orbital day and in stable SafeHold mode. To verify that no position sensor select is selected, check for message “SHM ADAC SHDP submode is no position selected on ACE A”. To verify that IRU 2 is selected for all three axes for rate sensor select, check for message “SHM IRU configuration is, IRU 2 for roll, IRU 2 for pitch, IRU 2 for yaw”.	
92.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
93.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
94.	Stop the telemetry drivers by entering the following in the ECL directive line ECL> **PG STOPDATA APID=1**	This ends the third subtest of the ADAC subtest block.	
95.	Repeat all or part of steps 1 through 12 as needed to set up the environment for testing the fourth subtests of the ADAC test block.		
96.	Change the telemetry coming from packGen. ECL> **START CONT2010B050**	Use the data in TABLE CONT 2010B-5 column 0. They represent the configuration of a stable Earth pointing submode SafeHold in orbital day. Safehold is turned off.	
97.	Start good telemetry flowing from packGen. ECL> **PG STARTDATA APID=1 COUNT=-1**	Start sending telemetry data to DSS.	

98.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. This is the initial baseline state of the S/C for subtest four of the ADAC subtest block.	
99.	View the Rtworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital day and in stable SafeHold mode. Verify this by checking for the following messages, “SHM ADAC submode is earth_pointing on ACE A”, “SHM EPS day detected”, and “SHM stability check passed”.	
100.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
101.	View the Rtworks message window display.	DSS should indicate a “SHM off” message.	
102.	Change the telemetry coming from packGen. ECL> **START CONT2010B051**	Use the data in TABLE CONT 2010B-5 column1. SafeHold Digital Processor (SHDP) sensor select is misconfigured.	
103.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. Safehold is turned back on.	
104.	View the RTworks message window display.	DSS should indicate that the SHDP sensor select is misconfigured. Verify this by checking for the following messages, “SHM ADAC SHDP misconfigured submode detected” and “Misconfigured, Roll value is 1, Pitch value is 1, Yaw value is 0”.	
105.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	

106.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
107.	Change the telemetry coming from packGen. ECL> **START CONT2010B052**	Use the data in TABLE CONT 2010B-5 column 2. SHDP sensor select is properly configured.	
108.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. Safehold is turned back on.	
109.	View the RTworks message window display.	DSS should indicate that the SHDP sensor select is properly configured. Verify this by checking for the following messages, “SHM ADAC SHDP submode is Earth pointing on ACE A”.	
110.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
111.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
112.	Change the telemetry coming from packGen. ECL> **START CONT2010B053**	Use the data in TABLE CONT 2010B-5 column 3. SHDP sensor select is again misconfigured.	
113.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. Safehold is turned back on.	
114.	View the RTworks message window display.	DSS should indicate that the SHDP sensor select is misconfigured. Verify this by checking for the following messages, “SHM ADAC SHDP misconfigured submode detected” and “Misconfigured, Roll value is 0, Pitch value is 1, Yaw value is 2”.	

115.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
116.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
117.	Change the telemetry coming from packGen. ECL> **START CONT2010B052**	Use the data in TABLE CONT 2010B-5 column 2. SHDP sensor select is properly configured.	
118.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. Safehold is turned back on.	
119.	View the RTworks message window display.	DSS should indicate that the SHDP sensor select is properly configured. Verify this by checking for the following messages, “SHM ADAC SHDP submode is Earth pointing on ACE A”.	
120.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
121.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
122.	Stop the telemetry drivers by entering the following in the ECL directive line ECL> **PG STOPDATA APID=1**	This ends the fourth subtest of the ADAC subtest block.	
123.	Repeat all or part of steps 1 through 12 as needed to set up the environment for testing the fifth subtest of the ADAC test block.		

124.	Change the telemetry coming from packGen. ECL> **START CONT2010B060**	Use the mnemonics in TABLE CONT2010B-6 column 0. They represent the configuration of a stable Earth pointing submode SafeHold in orbital day. Safehold is turned off.	
125.	Start good telemetry flowing from packGen. ECL> **PG STARTDATA APID=1 COUNT=-1**	Start sending telemetry data to DSS.	
126.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. This is the initial baseline state of the S/C for subtest five of the ADAC subtest block.	
127.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital day and in stable SafeHold mode. Verify this by checking for the following messages, “SHM ADAC submode is earth_pointing on ACE A”, “SHM EPS day detected”, and “SHM stability check passed”.	
128.	Change the telemetry coming from packGen. ECL> **START CONT2010B061**	Use the mnemonics in TABLE CONT2010B-6 column 1. They represent excessive pitch error of 4 degrees and hence failed the ADAC position check. To verify that the ADAC position check failed, check for messages, “SHM ADAC EP submode position check failed”, and “Position errors, Roll 0 deg., Pitch 4 deg.”	
129.	View the RTworks message window display.	DSS should indicate unstable SafeHold mode by checking for message “SHM stability check failed”.	
130.	Change the telemetry coming from packGen. ECL> **START CONT2010B062**	Use the mnemonics in TABLE CONT2010B-6 column 2. They represent the pitch error is again back within range and the ADAC position check passed. The S/C is back in stable SafeHold mode.	

131.	View the RTworks message window display.	DSS should indicate stable SafeHold mode by checking for the following messages, “SHM ADAC EP submode position check passed”, and “SHM stability check passed”.	
132.	Change the telemetry coming from packGen. ECL> **START CONT2010B063**	Use the mnemonics in TABLE CONT2010B- 6 column 3. They represent excessive pitch error of 5 degrees and again the ADAC position check failed. To verify that the ADAC position check failed, check for messages, “SHM ADAC EP submode position check failed”, and “Position errors, Roll 0 deg., Pitch 5 deg.”	
133.	View the RTworks message window display.	DSS should indicate unstable SafeHold mode by checking for message “SHM stability check failed”.	
134.	Change the telemetry coming from packGen. ECL> **START CONT2010B062**	Use the mnemonics in TABLE CONT2010B- 6 column 2. They represent no pitch error and the ADAC position check passed. The S/C is back in stable SafeHold mode.	
135.	View the RTworks message window display.	DSS should indicate stable SafeHold mode by checking for the following messages, “SHM ADAC EP submode position check passed”, and “SHM stability check passed”.	
136.	Change the telemetry coming from packGen. ECL> **START CONT2010B064**	Use the mnemonics in TABLE CONT2010B-6 column 4. They represent invalid pitch rate of 0 degrees per second for Earth pointing submode which causes the ADAC rate check to fail. To verify that the ADAC rate check failed, check for messages, “SHM ADAC EP submode rate check failed”, and “Rate errors, Roll 0 deg/sec, Pitch 0 deg/sec, Yaw 0 deg/sec”.	
137.	View the RTworks message window display.	DSS should indicate unstable SafeHold mode by checking for message “SHM stability check failed”.	

138.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
139.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
140.	Change the telemetry coming from packGen. ECL> **START CONT2010B070**	Use the mnemonics in TABLE CONT2010B-7 column 0. They represent the configuration of a stable Sun pointing submode SafeHold in orbital day.	
141.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. Safehold is turned back on.	
142.	View the RTworks message window display.	DSS should indicate that the S/C is in Sun pointing submode, in orbital day and in stable SafeHold mode. Verify this by checking for the following messages, “SHM ADAC submode is sun_pointing on ACE A”, “SHM EPS day detected”, and “SHM stability check passed”.	
143.	Change the telemetry coming from packGen. ECL> **START CONT2010B071**	Use the mnemonics in TABLE CONT2010B-7 column 1. They represent excessive CSS error of -10 degrees and hence failed the ADAC position check. To verify the ADAC position check failure, check for messages, “SHM ADAC SP submode position check failed”, and “Position errors, Pitch -10 deg., Yaw 0 deg.”	
144.	View the RTworks message window display.	DSS should indicate unstable SafeHold mode by checking for message, “SHM stability check failed”.	
145.	Change the telemetry coming from packGen. ECL> **START CONT2010B072**	Use the mnemonics in TABLE CONT2010B-7 column 2. CSS error is reset back to zero. ADAC position check should pass and a stable SafeHold mode indicated.	

146.	View the RTworks message window display.	DSS should indicate stable SafeHold mode by checking for the following messages, “SHM ADAC SP submode position check passed”, and “SHM stability check passed”.	
147.	Change the telemetry coming from packGen. ECL> **START CONT2010B073**	Use the mnemonics in TABLE CONT2010B-7 column 3. They represent excessive yaw rate of 0.2 degrees per second which cause the ADAC rate check to fail. To verify that the ADAC rate check failed, check for messages, “SHM ADAC SP submode rate S/C day check failed”, and “Rate errors, Roll 0 deg/sec, Pitch 0 deg/sec, Yaw 0.2 deg/sec”.	
148.	View the RTworks message window display.	DSS should indicate that the S/C is now sun pointing submode and in unstable SafeHold mode with a yaw rate error of .20 degrees per second.	
149.	Change the telemetry coming from packGen. ECL> **START CONT2010B074**	Use the mnemonics in TABLE CONT2010B-7 column 4. They represent no yaw rate error and the ADAC rate check passed. The S/C is back in stable SafeHold mode.	
150.	View the RTworks message window display.	DSS should indicate stable SafeHold mode by checking for the following messages, “SHM ADAC SP submode rate check passed”, and “SHM stability check passed”.	
151.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
152.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	

153.	Change the telemetry coming from packGen. ECL> **START CONT2010B080**	Use the mnemonics in TABLE CONT2010B-8 column 0. They represent the configuration of a stable Inertial pointing submode SafeHold in orbital day.	
154.	View the RTworks message window display.	DSS should indicate a stable, Inertial pointing submode SafeHold in orbital day. Verify this by checking for the following messages, "SHM ADAC submode is inertial_pointing on ACE A", "SHM EPS day detected", and "SHM stability check passed".	
155.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. Safehold is turned back on.	
156.	Change the telemetry coming from packGen. ECL> **START CONT2010B081**	Use the mnemonics in TABLE CONT2010B-8 column 1. They represent excessive pitch and yaw rate of 0.6 degrees per second and hence failed the ADAC rate check. To verify that the ADAC rate check failed, check for messages, "SHM ADAC IP submode rate check failed", and "Rate errors, Roll 0 deg/sec, Pitch 0.6 deg/sec, Yaw 0.6 deg/sec".	
157.	View the RTworks message window display.	DSS should indicate that the S/C has excessive pitch and yaw rate errors and unstable SafeHold mode.	
158.	Change the telemetry coming from packGen. ECL> **START CONT2010B082**	Use the mnemonics in TABLE CONT2010B-8 column 2. They represent no pitch and yaw rates for Inertial pointing submode and the ADAC rate check passed.	
159.	View the RTworks message window display.	DSS should indicate that the pitch and yaw rate errors are back within nominal range and the S/C is in stable SafeHold mode. Verify by checking for the following messages, "SHM ADAC IP submode rate check passed", and "SHM stability check passed".	

160.	Stop the telemetry drivers by entering the following in the ECL directive line ECL> **PG STOPDATA APID=1**	This ends the fifth subtest of the ADAC subtest block.	
161.	Repeat all or part of steps 1 through 12 as needed to set up the environment for testing the second subtest of the EPS test block.		
162.	Change the telemetry coming from packGen. ECL> **START CONT2010B090**	Use the mnemonics in TABLE CONT2010B-9 column 0. They represent the configuration of a stable, Earth pointing submode SafeHold in orbital night. This is the initial baseline state of the S/C for subtest two of the EPS subtest block.	
163.	Start good telemetry flowing from packGen. ECL> **PG STARTDATA APID=1 COUNT=-1**	Start sending telemetry data to DSS.	
164.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. This is the initial baseline state of the S/C for subtest two of the EPS subtest block.	
165.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital night, and in stable SafeHold mode. Verify this by checking for the following messages, “SHM ADAC submode is earth_pointing on ACE A”, “SHM EPS night detected”, and “SHM stability check passed”.	
166.	Change the telemetry coming from packGen. ECL> **START CONT2010B091**	Use the mnemonics in TABLE CONT2010B-9 column 1. They represent excessive battery charge rate above the upper threshold and cause the EPS battery check to fail. To verify that EPS battery check failed, check for the following messages, “SHM EPS battery charge rate suspect”, “P charge rate 11.88, B charge rate 12.24”.	

167.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital night and in unstable SafeHold mode with a EPS battery check failure. Verify this by checking for the message “SHM stability check failed”.	
168.	Change the telemetry coming from packGen. ECL> **START CONT2010B092**	Use the mnemonics in TABLE CONT2010B-9 column 2. They represent nominal battery charge rate and cause the EPS battery check to pass again.	
169.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital night and in stable SafeHold mode. Verify this by checking for the following messages, “ SHM EPS battery charge rate nominal”, and “SHM stability check passed”.	
170.	Change the telemetry coming from packGen. ECL> **START CONT2010B093**	Use the mnemonics in TABLE CONT2010B-9 column 3. They represent excessive battery charge rate below the lower threshold and cause the EPS battery check to fail. To verify that EPS battery check failed, check for the message “P charge rate 11.88, B charge rate 11.45”.	
171.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital night and in unstable SafeHold mode with a EPS battery check failure. Verify this by checking for the message “SHM stability check failed”.	
172.	Change the telemetry coming from packGen. ECL> **START CONT2010B092**	Use the mnemonics in TABLE CONT2010B-9 column 2. They represent nominal battery charge rate and cause the EPS battery check to pass again.	

173.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital night and in stable SafeHold mode. Verify this by checking for the following messages, “SHM EPS battery rate nominal”, and “SHM stability check passed”.	
174.	Change the telemetry coming from packGen. ECL> **START CONT2010B101**	Use the mnemonics in TABLE CONT2010B-10 column 1. They represent anomalous Voltage/Temperature (V/T) level exceeding the upper threshold and cause the EPS battery check to fail. To verify that EPS battery check failed, check for the following messages, “SHM EPS battery V/T suspect”, “P V/T level 7, B V/T level 8”.	
175.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital night and in unstable SafeHold mode with a EPS battery check failure. Verify this by checking for the message “SHM stability check failed”.	
176.	Change the telemetry coming from packGen. ECL> **START CONT2010B102**	Use the mnemonics in TABLE CONT2010B-10 column 2. They represent nominal V/T level and cause the EPS battery check to pass again.	
177.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital night and in stable SafeHold mode. Verify this by checking for the following messages, “SHM EPS battery V/T nominal”, and “SHM stability check passed”.	

178.	Change the telemetry coming from packGen. ECL> **START CONT2010B103**	Use the mnemonics in TABLE CONT2010B-10 column 3. They represent anomalous V/T level below the lower threshold and cause the EPS battery check to fail. To verify that EPS battery check failed, check for the following messages, "SHM EPS battery V/T suspect", "P V/T level 7, B V/T level 5".	
179.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital night and in unstable SafeHold mode with a EPS battery check failure. Verify this by checking for the message "SHM stability check failed".	
180.	Change the telemetry coming from packGen. ECL> **START CONT2010B102**	Use the mnemonics in TABLE CONT2010B-10 column 2. They represent nominal V/T level and cause the EPS battery check to pass again.	
181.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital night and in stable SafeHold mode. Verify this by checking for the following messages, "SHM EPS battery V/T nominal", and "SHM stability check passed".	
182.	Stop the telemetry drivers by entering the following in the ECL directive line: ECL> **PG STOPDATA APID=1**	This ends the second subtest of the EPS subtest block.	
183.	Repeat all or part of steps 1 through 12 as needed to set up the environment for testing the third subtests of the EPS test block.		

184.	Change the telemetry coming from packGen. ECL> **START CONT2010B110**	Use the mnemonics in TABLE CONT2010B-11 column 0. They represent the configuration of a stable, Earth pointing submode SafeHold in orbital day. This is the initial baseline state of the S/C for subtest three of the EPS subtest block.	
185.	Start good telemetry flowing from packGen. ECL> **PG STARTDATA APID=1 COUNT=-1**	Start sending telemetry data to DSS.	
186.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. This is the initial baseline state of the S/C for subtest two of the EPS subtest block.	
187.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital day, and in stable SafeHold mode. Verify this by checking for the following messages, “SHM ADAC submode is earth_pointing on ACE A”, “SHM EPS day detected”, and “SHM stability check passed”.	
188.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
189.	View the RTworks message window display.	DSS should indicate a “SHM off” message.	
190.	Change the telemetry coming from packGen. ECL> **START CONT2010B111**	Use the mnemonics in TABLE CONT2010B-11 column 1.	
191.	Turn Safehold mode on: ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. Safehold is turned back on.	

192.	View the RTworks message window display.	DSS should indicate that the S/C is in unstable SafeHold mode. S/C is in unstable SafeHold mode because the ADAC/EPS cross check failed. To verify that the ADAC/EPS cross check failed, check for message "SHM ADAC/EPS crosscheck failed".Verify by checking for the message "SHM stability check failed".	
193.	Change the telemetry coming from packGen. ECL> **START CONT2010B112**	Use the mnemonics in TABLE CONT2010B-11 column 2. They represent EPS configuration for Sun pointing submode of SafeHold mode. The S/C is now in stable SafeHold mode.	
194.	View the RTworks message window display.	DSS should indicate that the S/C is in Sun pointing submode, in orbital day and in stable SafeHold mode. Verify this by checking for the following messages, "SHM EPS submode is Sun Pointing", "SHM ADAC/EPS crosscheck passed", and "SHM stability check passed".	
195.	Change the telemetry coming from packGen. ECL> **START CONT2010B012**	Use the mnemonics in TABLE CONT 2010B-1 column 2. SafeHold is turned off and the S/C is being reconfigured.	
196.	View the RTworks message window display.	DSS should indicate a "SHM off" message.	
197.	Change the telemetry coming from packGen. ECL> **START CONT2010B113**	Use the mnemonics in TABLE CONT2010B-11 column 3.	
198.	Turn Safehold mode on ECL> **START CONT2010B011**	Use the mnemonics in TABLE CONT2010B-1 column 1. Safehold is turned back on.	

199.	View the RTworks message window display.	DSS should indicate that the S/C is in unstable SafeHold mode. SafeHold is turned back on, S/C is in unstable SafeHold mode because the ADAC/EPS cross check failed. To verify that the ADAC/EPS cross check failed, check for message "SHM ADAC/EPS crosscheck failed". Verify by checking for the message "SHM stability check failed".	
200.	Change the telemetry coming from packGen. ECL> **START CONT2010B114**	Use the mnemonics in TABLE CONT2010B-11 column 4. They represent EPS configuration for Earth pointing submode of SafeHold mode. The S/C is now in stable SafeHold mode.	
201.	View the RTworks message window display.	DSS should indicate that the S/C is in Earth pointing submode, in orbital day and in stable SafeHold mode. Verify this by checking for the following messages, "SHM ADAC/EPS crosscheck passed", and "SHM stability check passed".	
202.	Stop the telemetry drivers by entering the following in the ECL directive line ECL> **PG STOPDATA APID=1** Bring down PackGen. Press Ctrl-C.	This ends the third subtest of the EPS subtest block.	
203.	Bring down DSS.		
204.	Log off.		
205.	End of test.		

Table 5-15. CONT2010B-1 (1 of 3)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_gnc_sr_acea_safehold	0	1	0		
am1_gnc_sr_aceb_safehold	0	0	0		
am1_gnc_sr_shdpa_ad_fail	0				
am1_gnc_sr_shdpa_majvote	0				
am1_gnc_sr_shdpa_ramtest	0				
am1_gnc_sr_shdpa_seuerr	0				
am1_gnc_sr_acea_pitchsel	10			18	10
am1_gnc_sr_acea_rollsel	10			18	10
am1_gnc_sr_acea_yawsel	10			18	10
am1_gnc_sr_fin_ptcherr1	0.0				
am1_gnc_sr_fin_ptcherr2	0.0				
am1_gnc_sr_fin_rollerr1	0.0				
am1_gnc_sr_fin_rollerr2	0.0				
am1_gnc_sr_iru_x_rate1	0.0				
am1_gnc_sr_iru_x_rate2	0.0				
am1_gnc_sr_iru_y_rate1	-0.065				
am1_gnc_sr_iru_y_rate2	-0.065				
am1_gnc_sr_iru_z_rate1	0.0				
am1_gnc_sr_iru_z_rate2	0.0				
am1_gnc_sr_shdpa_senselx	1				
am1_gnc_sr_shdpa_sensely	1				
am1_gnc_sr_shdpa_senselz	1				

Table 5-15. CONT2010B-1 (2 of 3)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_eps_br_ade_a_on	0				
am1_eps_br_ade_b_on	1				
am1_eps_br_bpc1_a	1				
am1_eps_br_bpc1_b	1				
am1_eps_br_bpc1_c	1				
am1_eps_br_bpc1_d	1				
am1_eps_br_bpc1_xcndctn	1				
am1_eps_ir_bpc1_chnl_a	4				
am1_eps_ir_bpc1_chnl_b	4				
am1_eps_ir_bpc1_chnl_c	4				
am1_eps_ir_bpc1_chnl_d	4				
am1_eps_ir_bbat_chrga	11.88				
am1_eps_ir_pbat_chrga	11.88				
am1_eps_ir_bbat_dchrga	0.0				
am1_eps_ir_pbat_dchrga	0.0				
am1_eps_ir_sa_load_a	40.0				
am1_eps_ir_sa_load_b	40.0				
am1_eps_sr_bbat_chrgrta	11.88				
am1_eps_sr_pbat_chrgrta	11.88				
am1_eps_sr_bbat_vtcrva	7				
am1_eps_sr_pbat_vtcrva	7				
am1_eps_vr_bus_exrng_a	120.0				
am1_eps_vr_bus_exrng_b	120.0				
am1_eps_vr_bbat_va	75.0				

Table 5-15. CONT2010B-1 (3 of 3)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_eps_vr_pbat_va	75.0				
am1_eps_vr_saa_voc_a	127.0				
am1_eps_vr_saa_voc_b	127.0				
am1_eps_br_adea1_atindex	0				
am1_eps_br_adea2_atindex	0				
am1_eps_sr_adea_sh1rate	0				
am1_eps_sr_adea_sh2rate	0				
am1_eps_br_adea_actsadir	1				
am1_eps_br_adea_cmdsadir	0				
am1_eps_br_ade_sh1_mode	0				
am1_eps_br_ade_sh2_mode	0				
am1_eps_br_pdua_csmstat	0				
am1_eps_br_pdub_csmstat	0				
am1_eps_br_pdua_wdog_tmr	0				
am1_eps_br_pdub_wdog_tmr	0				
am1_eps_br_adea_sh1enbl	1				
am1_eps_br_adea_sh2enbl	1				
am1_gnc_sr_acea_css1yerr	0.0				

Table 5-16. CONT2010B-2

	Column 1	Column 2
am1_gnc_sr_acea_rollsel	10	18
am1_gnc_sr_acea_pitchsel	18	10

Table 5-17. CONT2010B-3 (1 of 4)

	Column 0	Column 1	Column 2	Column 3
am1_gnc_sr_acea_safehold	0			
am1_gnc_sr_aceb_safehold	0			
am1_gnc_sr_shdpa_ad_fail	0			
am1_gnc_sr_shdpa_majvote	0			
am1_gnc_sr_shdpa_ramtest	0			
am1_gnc_sr_shdpa_seuerr	0			
am1_gnc_sr_acea_css1yerr	0.0			
am1_gnc_sr_acea_css1zerr	0.0			
am1_gnc_sr_aceb_css2yerr	0.0			
am1_gnc_sr_aceb_css2zerr	0.0			
am1_gnc_sr_acea_pitchsel	32	64	32	32
am1_gnc_sr_acea_rollsel	32	64	64	32
am1_gnc_sr_acea_yawsel	32	64	64	32

Table 5-17. CONT2010B-3 (2 of 4)

	Column 0	Column 1	Column 2	Column 3
am1_gnc_sr_iru_x_rate1	0.0			
am1_gnc_sr_iru_x_rate2	0.0			
am1_gnc_sr_iru_y_rate1	0.0			
am1_gnc_sr_iru_y_rate2	0.0			
am1_gnc_sr_iru_z_rate1	0.0			
am1_gnc_sr_iru_z_rate2	0.0			
am1_gnc_sr_shdpa_senselx	0			
am1_gnc_sr_shdpa_sensely	0			
am1_gnc_sr_shdpa_senselz	0			
am1_eps_br_ade_a_on	0			
am1_eps_br_ade_b_on	1			
am1_eps_br_bpc1_a	1			
am1_eps_br_bpc1_b	1			
am1_eps_br_bpc1_c	1			
am1_eps_br_bpc1_d	1			
am1_eps_br_bpc1_xcndctn	1			
am1_eps_ir_bpc1_chnl_a	-3.5			
am1_eps_ir_bpc1_chnl_b	-3.5			
am1_eps_ir_bpc1_chnl_c	-3.5			

Table 5-17. CONT2010B-3 (3 of 4)

	Column 0	Column 1	Column 2	Column 3
am1_eps_ir_bpc1_chnl_d	-3.5			
am1_eps_ir_bbat_chrga	0.0			
am1_eps_ir_pbat_chrga	0.0			
am1_eps_ir_bbat_dchrga	18.0			
am1_eps_ir_pbat_dchrga	18.0			
am1_eps_ir_sa_load_a	0.0			
am1_eps_ir_sa_load_b	0.0			
am1_eps_sr_bbat_chrgrta	11.88			
am1_eps_sr_pbat_chrgrta	11.88			
am1_eps_sr_bbat_vtcrva	7			
am1_eps_sr_pbat_vtcrva	7			
am1_eps_vr_bus_exrng_a	120.0			
am1_eps_vr_bus_exrng_b	120.0			
am1_eps_vr_bbat_va	75.0			
am1_eps_vr_pbat_va	75.0			
am1_eps_vr_saa_voc_a	0.0			
am1_eps_vr_saa_voc_b	0.0			
am1_eps_br_adea1_atindex	1			
am1_eps_br_adea2_atindex	1			

Table 5-17. CONT2010B-3 (4 of 4)

	Column 0	Column 1	Column 2	Column 3
am1_eps_sr_adea_sh1rate	2			
am1_eps_sr_adea_sh2rate	2			
am1_eps_br_adea_actsadir	1			
am1_eps_br_adea_cmdsadir	0			
am1_eps_br_ade_sh1_mode	1			
am1_eps_br_ade_sh2_mode	1			
am1_eps_br_pdua_csmstat	0			
am1_eps_br_pdub_csmstat	0			
am1_eps_br_pdua_wdog_tmr	0			
am1_eps_br_pdub_wdog_tmr	0			
am1_eps_br_adea_sh1enbl	1			
am1_eps_br_adea_sh2enbl	1			

Table 5-18. CONT2010B-4 (1 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_gnc_sr_acea_safehold	0				
am1_gnc_sr_aceb_safehold	0				
am1_gnc_sr_shdpa_ad_fail	0				
am1_gnc_sr_shdpa_majvote	0				

Table 5-18. CONT2010B-4 (2 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_gnc_sr_shdpa_ramtest	0				
am1_gnc_sr_shdpa_seuerr	0				
am1_gnc_sr_acea_css1yerr	0.0				
am1_gnc_sr_acea_pitchsel	1	5	1	1	1
am1_gnc_sr_acea_rollsel	1	5	5	1	1
am1_gnc_sr_acea_yawsel	1	5	5	5	1
am1_gnc_sr_iru_x_rate1	0.0				
am1_gnc_sr_iru_x_rate2	0.0				
am1_gnc_sr_iru_y_rate1	0.0				
am1_gnc_sr_iru_y_rate2	0.0				
am1_gnc_sr_iru_z_rate1	0.0				
am1_gnc_sr_iru_z_rate2	0.0				
am1_gnc_sr_shdpa_senselx	2				
am1_gnc_sr_shdpa_sensely	2				
am1_gnc_sr_shdpa_senselz	2				
am1_eps_br_ade_a_on	0				
am1_eps_br_ade_b_on	1				
am1_eps_br_bpc1_a	1				
am1_eps_br_bpc1_b	1				
am1_eps_br_bpc1_c	1				

Table 5-18. CONT2010B-4 (3 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_eps_br_bpc1_d	1				
am1_eps_br_bpc1_xcndctn	1				
am1_eps_ir_bpc1_chnl_a	4.0				
am1_eps_ir_bpc1_chnl_b	4.0				
am1_eps_ir_bpc1_chnl_c	4.0				
am1_eps_ir_bpc1_chnl_d	4.0				
am1_eps_ir_bbat_chrga	11.88				
am1_eps_ir_pbat_chrga	11.88				
am1_eps_ir_bbat_dchrga	0.0				
am1_eps_ir_pbat_dchrga	0.0				
am1_eps_ir_sa_load_a	40.0				
am1_eps_ir_sa_load_b	40.0				
am1_eps_sr_bbat_chrgrta	11.88				
am1_eps_sr_pbat_chrgrta	11.88				
am1_eps_sr_bbat_vtcrva	7				
am1_eps_sr_pbat_vtcrva	7				
am1_eps_vr_bus_exrng_a	120.0				
am1_eps_vr_bus_exrng_b	120.0				
am1_eps_vr_bbat_va	75.0				

Table 5-18. CONT2010B-4 (4 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_eps_vr_pbat_va	75.0				
am1_eps_vr_saa_voc_a	127.0				
am1_eps_vr_saa_voc_b	127.0				
am1_eps_br_pdua_csmstat	0				
am1_eps_br_pdub_csmstat	0				
am1_eps_br_pdua_wdog_tmr	0				
am1_eps_br_pdub_wdog_tmr	0				
am1_eps_br_adea_sh1enbl	1				
am1_eps_br_adea_sh2enbl	1				

Table 5-19. CONT2010B-5 (1 of 4)

	Column 0	Column 1	Column 2	Column 3
am1_gnc_sr_acea_safehold	0			
am1_gnc_sr_aceb_safehold	0			
am1_gnc_sr_shdpa_ad_fail	0			
am1_gnc_sr_shdpa_majvote	0			
am1_gnc_sr_shdpa_ramtest	0			
am1_gnc_sr_shdpa_seuerr	0			
am1_gnc_sr_acea_pitchsel	10			
am1_gnc_sr_acea_rollsel	10			

Table 5-19. CONT2010B-5 (2 of 4)

	Column 0	Column 1	Column 2	Column 3
am1_gnc_sr_acea_yawsel	10			
am1_gnc_sr_fin_ptcherr1	0.0			
am1_gnc_sr_fin_ptcherr2	0.0			
am1_gnc_sr_fin_rollerr1	0.0			
am1_gnc_sr_fin_rollerr2	0.0			
am1_gnc_sr_iru_x_rate1	0.0			
am1_gnc_sr_iru_x_rate2	0.0			
am1_gnc_sr_iru_y_rate1	-0.065			
am1_gnc_sr_iru_y_rate2	-0.065			
am1_gnc_sr_iru_z_rate1	0.0			
am1_gnc_sr_iru_z_rate2	0.0			
am1_gnc_sr_shdpa_senselx	1	1	1	0
am1_gnc_sr_shdpa_sensely	1	1	1	1
am1_gnc_sr_shdpa_senselz	1	0	1	2
am1_eps_br_ade_a_on	0			
am1_eps_br_ade_b_on	1			
am1_eps_br_bpc1_a	1			
am1_eps_br_bpc1_b	1			
am1_eps_br_bpc1_c	1			
am1_eps_br_bpc1_d	1			
am1_eps_br_bpc1_xcndctn	1			
am1_eps_ir_bpc1_chnl_a	4.0			
am1_eps_ir_bpc1_chnl_b	4.0			
am1_eps_ir_bpc1_chnl_c	4.0			

Table 5-19. CONT2010B-5 (3 of 4)

	Column 0	Column 1	Column 2	Column 3
am1_eps_ir_bpc1_chnl_d	4.0			
am1_eps_ir_bbat_chrga	11.88			
am1_eps_ir_pbat_chrga	11.88			
am1_eps_ir_bbat_dchrga	0.0			
am1_eps_ir_pbat_dchrga	0.0			
am1_eps_ir_sa_load_a	40.0			
am1_eps_ir_sa_load_b	40.0			
am1_eps_sr_bbat_chrgrta	11.88			
am1_eps_sr_pbat_chrgrta	11.88			
am1_eps_sr_bbat_vtcrva	7			
am1_eps_sr_pbat_vtcrva	7			
am1_eps_vr_bus_exrng_a	120.0			
am1_eps_vr_bus_exrng_b	120.0			
am1_eps_vr_bbat_va	75.0			
am1_eps_vr_pbat_va	75.0			
am1_eps_vr_saa_voc_a	127.0			
am1_eps_vr_saa_voc_b	127.0			
am1_eps_br_adea1_atindex	0			
am1_eps_br_adea2_atindex	0			
am1_eps_sr_adea_sh1rate	0			
am1_eps_sr_adea_sh2rate	0			
am1_eps_br_adea_actsadir	1			
am1_eps_br_adea_cmdsadir	0			
am1_eps_br_ade_sh1_mode	0			

Table 5-19. CONT2010B-5 (4 of 4)

	Column 0	Column 1	Column 2	Column 3
am1_eps_br_ade_sh2_mode	0			
am1_eps_br_pdua_csmstat	0			
am1_eps_br_pdub_csmstat	0			
am1_eps_br_pdua_wdog_tmr	0			
am1_eps_br_pdub_wdog_tmr	0			
am1_eps_br_adea_sh1enbl	1			
am1_eps_br_adea_sh2enbl	1			
am1_gnc_sr_acea_css1yerr	0.0			

Table 5-20. CONT2010B-6 (1 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_gnc_sr_acea_safehold	0				
am1_gnc_sr_aceb_safehold	0				
am1_gnc_sr_shdpa_ad_fail	0				
am1_gnc_sr_shdpa_majvote	0				
am1_gnc_sr_shdpa_ramtest	0				
am1_gnc_sr_shdpa_seuerr	0				
am1_gnc_sr_acea_pitchsel	10				
am1_gnc_sr_acea_rollsel	10				
am1_gnc_sr_acea_yawsel	10				
am1_gnc_sr_fin_ptcherr1	0.0	4.0	0.0	5.0	
am1_gnc_sr_fin_ptcherr2	0.0	4.0	0.0	5.0	

Table 5-20. CONT2010B-6 (2 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_gnc_sr_fin_rollerr1	0.0				
am1_gnc_sr_fin_rollerr2	0.0				
am1_gnc_sr_iru_x_rate1	0.0				
am1_gnc_sr_iru_x_rate2	0.0				
am1_gnc_sr_iru_y_rate1	-0.065				0.0
am1_gnc_sr_iru_y_rate2	-0.065				0.0
am1_gnc_sr_iru_z_rate1	0.0				
am1_gnc_sr_iru_z_rate2	0.0				
am1_gnc_sr_shdpa_senselx	1				
am1_gnc_sr_shdpa_sensely	1				
am1_gnc_sr_shdpa_senselz	1				
am1_eps_br_ade_a_on	0				
am1_eps_br_ade_b_on	1				
am1_eps_br_bpc1_a	1				
am1_eps_br_bpc1_b	1				
am1_eps_br_bpc1_c	1				
am1_eps_br_bpc1_d	1				
am1_eps_br_bpc1_xcndctn	1				
am1_eps_ir_bpc1_chnl_a	4.0				
am1_eps_ir_bpc1_chnl_b	4.0				
am1_eps_ir_bpc1_chnl_c	4.0				
am1_eps_ir_bpc1_chnl_d	4.0				
am1_eps_ir_bbat_chrga	11.88				
am1_eps_ir_pbat_chrga	11.88				

Table 5-20. CONT2010B-6 (3 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_eps_ir_bbat_dchrga	0.0				
am1_eps_ir_pbat_dchrga	0.0				
am1_eps_ir_sa_load_a	40.0				
am1_eps_ir_sa_load_b	40.0				
am1_eps_sr_bbat_chrgrta	11.88				
am1_eps_sr_pbat_chrgrta	11.88				
am1_eps_sr_bbat_vtcrva	7				
am1_eps_sr_pbat_vtcrva	7				
am1_eps_vr_bus_exrng_a	120.0				
am1_eps_vr_bus_exrng_b	120.0				
am1_eps_vr_bbat_va	75.0				
am1_eps_vr_pbat_va	75.0				
am1_eps_vr_saa_voc_a	127.0				
am1_eps_vr_saa_voc_b	127.0				
am1_eps_br_adea1_atindex	0				
am1_eps_br_adea2_atindex	0				
am1_eps_sr_adea_sh1rate	0				
am1_eps_sr_adea_sh2rate	0				
am1_eps_br_adea_actsadir	1				
am1_eps_br_adea_cmdsadir	0				
am1_eps_br_ade_sh1_mode	0				
am1_eps_br_ade_sh2_mode	0				
am1_eps_br_pdua_csmstat	0				
am1_eps_br_pdub_csmstat	0				

Table 5-20. CONT2010B-6 (4 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_eps_br_pdua_wdog_tmr	0				
am1_eps_br_pdub_wdog_tmr	0				
am1_eps_br_adea_sh1enbl	1				
am1_eps_br_adea_sh2enbl	1				
am1_gnc_sr_acea_css1yerr	0.0				

Table 5-21. CONT2010B-7 (1 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_gnc_sr_acea_safehold	0				
am1_gnc_sr_aceb_safehold	0				
am1_gnc_sr_shdpa_ad_fail	0				
am1_gnc_sr_shdpa_majvote	0				
am1_gnc_sr_shdpa_ramtest	0				
am1_gnc_sr_shdpa_seuerr	0				
am1_gnc_sr_acea_rollsel	64				
am1_gnc_sr_acea_pitchsel	64				
am1_gnc_sr_acea_yawsel	64				
am1_gnc_sr_acea_css1yerr	0.0	-10.0	0.0		
am1_gnc_sr_acea_css1zerr	0.0				
am1_gnc_sr_aceb_css2yerr	0.0				
am1_gnc_sr_aceb_css2zerr	0.0				
am1_gnc_sr_iru_x_rate1	0.0				

Table 5-21. CONT2010B-7 (2 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_gnc_sr_iru_x_rate2	0.0				
am1_gnc_sr_iru_y_rate1	0.0				
am1_gnc_sr_iru_y_rate2	0.0				
am1_gnc_sr_iru_z_rate1	0.0			0.2	0.0
am1_gnc_sr_iru_z_rate2	0.0				
am1_gnc_sr_shdpa_senselx	0				
am1_gnc_sr_shdpa_sensely	0				
am1_gnc_sr_shdpa_senselz	0				
am1_eps_br_adea1_atindex	1				
am1_eps_br_adea2_atindex	1				
am1_eps_sr_adea_sh1rate	2				
am1_eps_sr_adea_sh2rate	2				
am1_eps_br_adea_actsadir	1				
am1_eps_br_adea_cmdsadir	0				
am1_eps_br_ade_sh1_mode	1				
am1_eps_br_ade_sh2_mode	1				
am1_eps_br_ade_a_on	0				
am1_eps_br_ade_b_on	1				
am1_eps_br_bpc1_a	1				
am1_eps_br_bpc1_b	1				
am1_eps_br_bpc1_c	1				
am1_eps_br_bpc1_d	1				
am1_eps_br_bpc1_xcndctn	1				
am1_eps_ir_bpc1_chnl_a	4.0				

Table 5-21. CONT2010B-7 (3 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_eps_ir_bpc1_chnl_b	4.0				
am1_eps_ir_bpc1_chnl_c	4.0				
am1_eps_ir_bpc1_chnl_d	4.0				
am1_eps_ir_bbat_chrga	11.88				
am1_eps_ir_pbat_chrga	11.88				
am1_eps_ir_bbat_dchrga	0.0				
am1_eps_ir_pbat_dchrga	0.0				
am1_eps_ir_sa_load_a	40.0				
am1_eps_ir_sa_load_b	40.0				
am1_eps_sr_bbat_chrgrta	11.88				
am1_eps_sr_pbat_chrgrta	11.88				
am1_eps_sr_bbat_vtcrva	7				
am1_eps_sr_pbat_vtcrva	7				
am1_eps_vr_bus_exrng_a	120.0				
am1_eps_vr_bus_exrng_b	120.0				
am1_eps_vr_bbat_va	75.0				
am1_eps_vr_pbat_va	75.0				
am1_eps_vr_saa_voc_a	127.0				
am1_eps_vr_saa_voc_b	127.0				
am1_eps_br_pdua_csmstat	0				
am1_eps_br_pdub_csmstat	0				
am1_eps_br_pdua_wdog_tmr	0				
am1_eps_br_pdub_wdog_tmr	0				

Table 5-21. CONT2010B-7 (4 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_eps_br_adea_sh1enbl	1				
am1_eps_br_adea_sh2enbl	1				

Table 5-22. CONT2010B-8 (1 of 3)

	Column 0	Column 1	Column 2
am1_gnc_sr_acea_safehold	0		
am1_gnc_sr_aceb_safehold	0		
am1_gnc_sr_shdpa_ad_fail	0		
am1_gnc_sr_shdpa_majvote	0		
am1_gnc_sr_shdpa_ramtest	0		
am1_gnc_sr_shdpa_seuerr	0		
am1_gnc_sr_acea_css1yerr	0.0		
am1_gnc_sr_acea_pitchsel	1		
am1_gnc_sr_acea_rollsel	1		
am1_gnc_sr_acea_yawsel	1		
am1_gnc_sr_iru_x_rate1	0.0		
am1_gnc_sr_iru_x_rate2	0.0		
am1_gnc_sr_iru_y_rate1	0.0	0.6	0.0
am1_gnc_sr_iru_y_rate2	0.0		
am1_gnc_sr_iru_z_rate1	0.0	0.6	0.0

Table 5-22. CONT2010B-8 (2 of 3)

	Column 0	Column 1	Column 2
am1_gnc_sr_iru_z_rate2	0.0		
am1_gnc_sr_shdpa_senselx	3		
am1_gnc_sr_shdpa_sensely	3		
am1_gnc_sr_shdpa_senselz	3		
am1_eps_br_ade_a_on	0		
am1_eps_br_ade_b_on	1		
am1_eps_br_bpc1_a	1		
am1_eps_br_bpc1_b	1		
am1_eps_br_bpc1_c	1		
am1_eps_br_bpc1_d	1		
am1_eps_br_bpc1_xcndctn	1		
am1_eps_ir_bpc1_chnl_a	4.0		
am1_eps_ir_bpc1_chnl_b	4.0		
am1_eps_ir_bpc1_chnl_c	4.0		
am1_eps_ir_bpc1_chnl_d	4.0		
am1_eps_ir_bbat_chrga	11.88		
am1_eps_ir_pbat_chrga	11.88		
am1_eps_ir_bbat_dchrga	0.0		
am1_eps_ir_pbat_dchrga	0.0		

Table 5-22. CONT2010B-8 (3 of 3)

	Column 0	Column 1	Column 2
am1_eps_ir_sa_load_a	40.0		
am1_eps_ir_sa_load_b	40.0		
am1_eps_sr_bbat_chrgrta	11.88		
am1_eps_sr_pbat_chrgrta	11.88		
am1_eps_sr_bbat_vtcrva	7		
am1_eps_sr_pbat_vtcrva	7		
am1_eps_vr_bus_exrng_a	120.0		
am1_eps_vr_bus_exrng_b	120.0		
am1_eps_vr_bbat_va	75.0		
am1_eps_vr_pbat_va	75.0		
am1_eps_vr_saa_voc_a	127.0		
am1_eps_vr_saa_voc_b	127.0		
am1_eps_br_pdua_csmstat	0		
am1_eps_br_pdub_csmstat	0		
am1_eps_br_pdua_wdog_tmr	0		
am1_eps_br_pdub_wdog_tmr	0		
am1_eps_br_adea_sh1enbl	1		
am1_eps_br_adea_sh2enbl	1		

Table 5-23. CONT2010B-9 (1 of 4)

	Column 0	Column 1	Column 2	Column 3
am1_gnc_sr_acea_safehold	0			
am1_gnc_sr_aceb_safehold	0			
am1_gnc_sr_shdpa_ad_fail	0			
am1_gnc_sr_shdpa_majvote	0			
am1_gnc_sr_shdpa_ramtest	0			
am1_gnc_sr_shdpa_seuerr	0			
am1_gnc_sr_acea_pitchsel	10			
am1_gnc_sr_acea_rollsel	10			
am1_gnc_sr_acea_yawsel	10			
am1_gnc_sr_fin_ptcherr1	0.0			
am1_gnc_sr_fin_ptcherr2	0.0			
am1_gnc_sr_fin_rollerr1	0.0			
am1_gnc_sr_fin_rollerr2	0.0			
am1_gnc_sr_iru_x_rate1	0.0			
am1_gnc_sr_iru_x_rate2	0.0			
am1_gnc_sr_iru_y_rate1	-0.065			
am1_gnc_sr_iru_y_rate2	-0.065			
am1_gnc_sr_iru_z_rate1	0.0			
am1_gnc_sr_iru_z_rate2	0.0			

Table 5-23. CONT2010B-9 (2 of 4)

	Column 0	Column 1	Column 2	Column 3
am1_gnc_sr_shdpa_senselx	1			
am1_gnc_sr_shdpa_sensely	1			
am1_gnc_sr_shdpa_senselz	1			
am1_eps_br_ade_a_on	0			
am1_eps_br_ade_b_on	1			
am1_eps_br_bpc1_a	1			
am1_eps_br_bpc1_b	1			
am1_eps_br_bpc1_c	1			
am1_eps_br_bpc1_d	1			
am1_eps_br_bpc1_xcndctn	1			
am1_eps_ir_bpc1_chnl_a	-3.5			
am1_eps_ir_bpc1_chnl_b	-3.5			
am1_eps_ir_bpc1_chnl_c	-3.5			
am1_eps_ir_bpc1_chnl_d	-3.5			
am1_eps_ir_bbat_chrga	0.0			
am1_eps_ir_pbat_chrga	0.0			
am1_eps_ir_bbat_dchrga	18.0			
am1_eps_ir_pbat_dchrga	18.0			
am1_eps_ir_sa_load_a	0.0			

Table 5-23. CONT2010B-9 (3 of 4)

	Column 0	Column 1	Column 2	Column 3
am1_eps_ir_sa_load_b	0.0			
am1_eps_sr_bbat_chrgrta	11.88	12.24	11.88	11.45
am1_eps_sr_pbat_chrgrta	11.88	12.24	11.88	11.45
am1_eps_sr_bbat_vtcrva	7			
am1_eps_sr_pbat_vtcrva	7			
am1_eps_vr_bus_exrng_a	120.0			
am1_eps_vr_bus_exrng_b	120.0			
am1_eps_vr_bbat_va	75.0			
am1_eps_vr_pbat_va	75.0			
am1_eps_vr_saa_voc_a	0.0			
am1_eps_vr_saa_voc_b	0.0			
am1_eps_br_adea1_atindex	0			
am1_eps_br_adea2_atindex	0			
am1_eps_sr_adea_sh1rate	0			
am1_eps_sr_adea_sh2rate	0			
am1_eps_br_adea_actsadir	1			
am1_eps_br_adea_cmdsadir	0			
am1_eps_br_ade_sh1_mode	0			
am1_eps_br_ade_sh2_mode	0			

Table 5-23. CONT2010B-9 (4 of 4)

	Column 0	Column 1	Column 2	Column 3
am1_eps_br_pdua_csmstat	0			
am1_eps_br_pdub_csmstat	0			
am1_eps_br_pdua_wdog_tmr	0			
am1_eps_br_pdub_wdog_tmr	0			
am1_eps_br_adea_sh1enbl	1			
am1_eps_br_adea_sh2enbl	1			
am1_gnc_sr_acea_css1yerr	0.0			

Table 5-24. CONT2010B-10

	Column 1	Column 2	Column 3
am1_eps_sr_bbat_vtcrva	8	7	5
am1_eps_sr_pbat_vtcrva	8	7	5

Table 5-25. CONT2010B-11 (1 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_gnc_sr_acea_safehold	0				
am1_gnc_sr_aceb_safehold	0				

Table 5-25. CONT2010B-11 (2 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_gnc_sr_shdpa_ad_fail	0				
am1_gnc_sr_shdpa_majvote	0				
am1_gnc_sr_shdpa_ramtest	0				
am1_gnc_sr_shdpa_seuerr	0				
am1_gnc_sr_acea_pitchsel	10	64		10	
am1_gnc_sr_acea_rollsel	10	64		10	
am1_gnc_sr_acea_yawsel	10	64		10	
am1_gnc_sr_fin_ptcherr1	0.0			0.0	
am1_gnc_sr_fin_ptcherr2	0.0			0.0	
am1_gnc_sr_fin_rollerr1	0.0			0.0	
am1_gnc_sr_fin_rollerr2	0.0			0.0	
am1_gnc_sr_iru_x_rate1	0.0				
am1_gnc_sr_iru_x_rate2	0.0				
am1_gnc_sr_iru_y_rate1	-0.065	0.0		-0.065	
am1_gnc_sr_iru_y_rate2	-0.065	0.0		-0.065	
am1_gnc_sr_iru_z_rate1	0.0				
am1_gnc_sr_iru_z_rate2	0.0				
am1_gnc_sr_shdpa_senselx	1	0		1	
am1_gnc_sr_shdpa_sensely	1	0		1	
am1_gnc_sr_shdpa_senselz	1	0		1	
am1_gnc_sr_acea_css1yerr	0.0	0.0			
am1_gnc_sr_acea_css1zerr		0.0			
am1_eps_br_ade_a_on	0				
am1_eps_br_ade_b_on	1				

Table 5-25. CONT2010B-11 (3 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_eps_br_bpc1_a	1				
am1_eps_br_bpc1_b	1				
am1_eps_br_bpc1_c	1				
am1_eps_br_bpc1_d	1				
am1_eps_br_bpc1_xcndctn	1				
am1_eps_ir_bpc1_chnl_a	4.0				
am1_eps_ir_bpc1_chnl_b	4.0				
am1_eps_ir_bpc1_chnl_c	4.0				
am1_eps_ir_bpc1_chnl_d	4.0				
am1_eps_ir_bbat_chrga	11.88				
am1_eps_ir_pbat_chrga	11.88				
am1_eps_ir_bbat_dchrga	0.0				
am1_eps_ir_pbat_dchrga	0.0				
am1_eps_ir_sa_load_a	40.0				
am1_eps_ir_sa_load_b	40.0				
am1_eps_sr_bbat_chrgrta	11.88				
am1_eps_sr_pbat_chrgrta	11.88				
am1_eps_sr_bbat_vtcrva	7				
am1_eps_sr_pbat_vtcrva	7				
am1_eps_vr_bus_exrng_a	120.0				
am1_eps_vr_bus_exrng_b	120.0				
am1_eps_vr_bbat_va	75.0				
am1_eps_vr_pbat_va	75.0				
am1_eps_vr_saa_voc_a	127.0				

Table 5-25. CONT2010B-11 (4 of 4)

	Column 0	Column 1	Column 2	Column 3	Column 4
am1_eps_vr_saa_voc_b	127.0				
am1_eps_br_adea1_atindex	0		1		0
am1_eps_br_adea2_atindex	0		1		0
am1_eps_sr_adea_sh1rate	0		2		0
am1_eps_sr_adea_sh2rate	0		2		0
am1_eps_br_adea_actsadir	1		1		1
am1_eps_br_adea_cmdsadir	0		0		0
am1_eps_br_ade_sh1_mode	0		1		0
am1_eps_br_ade_sh2_mode	0		1		0
am1_eps_br_pdua_csmstat	0				
am1_eps_br_pdub_csmstat	0				
am1_eps_br_pdua_wdog_tmr	0				
am1_eps_br_pdub_wdog_tmr	0				
am1_eps_br_adea_sh1enbl	1				
am1_eps_br_adea_sh2enbl	1				

Request/Analyze User Performance Data (UPD)

Test Case No: NCC-2030B

Test Configuration: See Appendix G

Test Support: EOC startup scripts. Data Server, Real-Time Server, UserStation, UPD DataDriver, UPD Data Set/File

Test Case Description:

This test case is designed to verify the capability of the FOS software to send User Performance Data (UPD) request messages to the NCC, Ingest UPD data into the Database, Demonstrate the capability to replay stored NCC UPD's data for a specific time period, the capability to process all data for time requested, the ability to process requested data between 3 to 12 times the real-time captured rate, the capability to perform Max, Min, and Mean (MMM) stats on UPD.

Success Criteria:

The test is considered successful when the FOS software is able to send a UPD request to the NCC, process the data requested, process the data requested at rates between 3 to 12 times the captured rate, provide statistical data on the Max, Min, and Mean (MMM) of incoming real-time NCC data, archive/save processed NCC data.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	Log onto an EOC workstation. Start the Data Server. Reference Test Case SYS2000B -- FOS Server Startup.	Data Server processes are running.	
2.	Start the Real-Time Server. Reference Test Case SYS2000B -- FOS Server Startup.	Real-Time Server processes are running.	

3.	Log onto 1 FOT User Station. Start the User Station. Reference Test Case SYS2010B -- User Station Startup and Authentication.	The FOT User Station is running and the 'Control window' is displayed.	
4.	Initialize the 'Global' event graphical timeline and event message displays from the Tools button by clicking on the Tools button located at the bottom of the Environment Control window, then select the 'Global' Events Display option.	The 'Global' events display will be displayed on the UserStation screen.	
5.	Initialize the 'Local' event graphical timeline and event message displays from the Tools button by clicking on the Tools button located at the bottom of the Environment Control window, then select the 'Local' Events Display option.	The 'Local' events display will be displayed on the UserStation screen.	
6.	Connect to a real-time operational string from the Environment Control window; **> STRING CONNECT STRING =100 CONFIG=MIRROR**	Events Display message output: 'Successfully connected to string 100'	
7.	Take groundcontrol at UserStation. > **TAKE GROUNDCONTROL STRING=100**	Events Display message output: 'Ground Control Authority has changed from EcDNull to fostest**X**'	

8.	Take Command Control at the UserStation. > **TAKE COMMAND STRING=100**	Events Display message output: 1. 'Command Authority has changed from EcDNull to fostestX' 2. 'Set Command authority to user fostest**X** at workstation fose**X**oe' 3. 'Command Authority of NccGroundMgr changed to user: fostest**X** WKS: fose**X**oe' 4. 'Command Authority of NccStatusMgr changed to user: fostest**X** WKS: fose**X**oe'	
9.	Bring up Page Displays from the 'Tlm Win' button in the Control window: 1. Click on the 'Tlm Win' button3. 2. Select PageNames(s) TBD. 3. Submit ***UPD_MA - page*** ***UPD_SSA - page*** ***UPD_KSA - page*** ***RCTDM - page*** ***Time_Transfer - page***	Pre-Defined displays will appear on screen.	

10.	Start UPD Driver. **%/net/beeper/fosb/dev/AM1/bin/sun_sparc_5-5** **% upd -sc AM1 -sid 100 -state 1**	Options menu for UPD Driver will appear on screen.	
11.	Start RcmClient Driver from a separate window. **%/net/beeper/fosb/dev/AM1/bin/sun_sparc_5-5** **% RcmClient**	RcmClient process will run in background.	
12.	Select Option #3 from the UPD Driver menu. **% 3**	Options menu for UPD configuration will appear on screen.	
13.	After configuration is complete, start UPD data.	*No Action/Result, information only*.	
14.	Send a User Performance Data (UPD) request message from the Command Control window. > **NCC UPD ENABLE**	Events Display message output: '**NCC UPD ENABLE message sent to NCC**'	
15.	Display Pages will update with incoming UPD data.	Pages will update. Events Display message output: '**Start Receiving UPD from NCC.'**	
16.	Send a User Performance Data (UPD) request message from the Command Control window. > **NCC UPD DISABLE**	Events Display message output: '**NCC UPD DISABLE message sent to NCC**'	

17.	Display Pages will stop updating with incoming UPD data.	Pages should stop updating. Events Display message output: '**Stop receiving UPD from NCC**' Take Snap.	
18.	***UPD Replay Portion Starts (Archived).***	***No Action/Result, information only.***	
19.	Bring up UPD_Replay page: Click on 'Tlm Win' button in the Control window. Select UPD_Replay.	UPD_Replay page will appear on screen.	
20.	Bring up 'Replay Controller' window from the 'Tools' button: Click on Tools. Select Replay Controller.	Replay Controller window will appear on screen.	
21.	Select a Spacecraft: Click on Spacecraft. Select 'AM1'.	AM1 will appear selected.	
22.	Select a Data Base: Click on Data Base. Select appropriate database.	1.0 will appear selected.	

23.	Select a Data Type: Click on Data Type. Select 'NCC'.	NCC will appear selected.	
24.	Select Replay Type: Click on Replay Type. Select Dedicated.	Dedicated will appear selected.	
25.	Select a Replay Rate (Kbps): Click on Replay Rate (Kbps). Enter 'XX' or toggle 'up' and 'down' arrows to desired rate. ***Note, Enter Real-Time capture rate.***	XX will appear selected.	
26.	Select a time period to process. Click on Select Time	Time Selector will appear in Replay window	
27.	Input start and stop times in Archive Telemetry Specification area. Start - **YYYY/DOY HH:MM:SS** Stop - **YYYY/DOY HH:MM:SS**	Start and Stop fields will become populated with data.	
28.	Submit request by clicking on 'Submit Request' button.	The bottom half of the window will display the requested start and stop times.	
29.	Start the data replay by selecting the 'Play' button.	UPD data replay will start, values in UPD_Replay page will update.	

30.	Pause the replay button by selecting the 'Pause' button.	UPD data replay will pause.	
31.	Continue the replay in the Step mode by clicking on the 'Step' button.	UPD data replay will start again, but only will process data in a 'step' mode, values in UPD_Replay page will update.	
32.	Change playback modes from Step to Play and process the rest of the selected time by selecting the 'Play' button.	UPD data replay start again, values in UPD_Replay page will update until the end of the requested time is reached, at which time a pop-up window will appear announcing that the end of data has been reached.	
33.	Take snaps of UPD_replay page.	Snap taken.	
34.	Save processing request to 'file': Select 'File' from upper left side of Replay Controller. Select Save as… Enter directory and filename where file will be saved at.	Processing request will be saved.	
35.	***Start a second request.***	***No Action/Result, information only.***	
36.	Click on the 'Reset' button.	All fields in the Replay Controller window return to default settings.	
37.	Select a Spacecraft: Click on Spacecraft. Select 'AM1'.	AM1 will appear selected.	

38.	Select a Data Base: Click on Data Base. Select '1.0'.	1.0 will appear selected.	
39.	Select a Data Type: Click on Data Type. Select 'NCC'.	NCC will appear selected.	
40.	Select Replay Type: Click on Replay Type. Select Dedicated.	Dedicated will appear selected.	
41.	Select a Replay Rate (Kbps): Click on Replay Rate (Kbps). Enter 'XX' or toggle 'up' and 'down' arrows to desired rate. ***Note, Enter 3 x Real-Time capture rate.**	XX will appear selected.	
42.	Select a time period to process: Click on Select Time.	Time Selector will appear in Replay window	
43.	Input start and stop times in Archive Telemetry Specification area. Start - **YYYY/DOY HH:MM:SS** Stop - **YYYY/DOY HH:MM:SS**	Start and Stop fields will become populated with data.	

44.	Submit request: Click on ‘Submit Request’ button.	The bottom half of the window will display the requested start and stop times.	
45.	Start the data replay: Select the ‘Play’ button.	UPD data replay will start, values in UPD_Replay page will update.	
46.	Pause the replay: Select the ‘Pause’ button.	UPD data replay will pause.	
47.	Continue the replay in the Step mode: Click on the ‘Step’ button.	UPD data replay will start again, but only will process data in a ‘step’ mode, values in UPD_Replay page will update.	
48.	Change playback modes from Step to Play and process the rest of the selected time: Slide the time bar to a time starting after the step time. Select the ‘Play’ button.	UPD data replay start again, values in UPD_Replay page will update until the end of the requested time is reached, at which time a pop-up window will appear announcing that the end of data has been reached.	
49.	Take Snaps of UPD_replay page.	Snap taken.	
50.	Save processing request to ‘file’: Select ‘File’ from upper left side of Replay Controller. Select Save as… Enter directory and filename where file will be saved at.	Processing request will be saved.	

51.	***Start a third request.***	***No Action/Result, information only.***	
52.	Click on the 'Reset' button.	All fields in the Replay Controller window return to default settings.	
53.	Select a Spacecraft: Click on Spacecraft. Select 'AM1'.	AM1 will appear selected.	
54.	Select a Data Base: Click on Data Base. Select '1.0'.	1.0 will appear selected.	
55.	Select a Data Type: Click on Data Type. Select 'NCC'.	NCC will appear selected.	
56.	Select Replay Type: Click on Replay Type. Select Dedicated.	Dedicated will appear selected.	
57.	Select a Replay Rate (Kbps): Click on Replay Rate (Kbps). Enter 'XX' or toggle 'up' and 'down' arrows to desired rate. ****Note, Enter 12 x Real-Time capture rate.***	XX will appear selected.	

58.	Select a time period to process by clicking on Select Time.	Time Selector will appear in Replay window.	
59.	Input start and stop times in Archive Telemetry Specification area. Start - **YYYY/DOY HH:MM:SS** Stop - **YYYY/DOY HH:MM:SS**	Start and Stop fields will become populated with data.	
60.	Submit request by clicking on 'Submit Request' button.	The bottom half of the window will display the requested start and stop times.	
61.	Start the data replay by selecting the 'Play' button.	UPD data replay will start, values in UPD_Replay page will update.	
62.	Pause the replay by selecting the 'Pause' button.	UPD data replay will pause.	
63.	Continue the replay in the Step mode by clicking on the 'Step' button.	UPD data replay will start again, but only will process data in a 'step' mode, values in UPD_Replay page will update.	
64.	Change playback modes from Step to Play and process the rest of the selected time: Slide the time bar to a time starting after the step time. Select the 'Play' button.	UPD data replay start again, values in UPD_Replay page will update until the end of the requested time is reached, at which time a pop-up window will appear announcing that the end of data has been reached.	
65.	Take snaps of UPD_replay page.	Snap taken.	
66.	Compare snaps.	All data/fields should match in all 3 snaps.	

67.	Save processing request to ‘file’: Select ‘File’ from upper left side of Replay Controller. Select Save as… Enter directory and filename where file will be saved at.	Processing request will be saved.	
68.	Bring down all processes.		
69.	End of test.		

CONT2020B-SCC Activity Log

Test Case No.: CONT2020B

Test Configuration: See Appendix G

Test Support: The telemetry driver *FtPgPackGen* is used to generate housekeeping data and dump data, in which activity log messages are embedded. The database table *fos_activity_log* supplies the format for each activity log message. The database table *fos_activity_archive* is used to store the activity log messages that have been received and interpreted by the Activity Log Monitor process. Procedure CONT2020a is used to configure the packet generator for housekeeping data. Procedure CONT2020b is used to configure the packet generator for 16kb diagnostic data.

Test Case Description: This test is designed to verify the ability to receive and monitor housekeeping telemetry and provide notification of new SCC activity log messages. It also is set up to verify that the user is notified of the number of back orbit activity log messages after the dump data is processed and the number of severe messages from the dumped back orbit data.

Following sign-on, the telemetry driver is started. The driver sends housekeeping packets to the Decom process. The packets are decommutated. The Parameter Server and the Telemetry Archiver are updated. The Activity Log Monitor receives parameters from the Parameter Server on a packet by packet basis. The Activity Log Monitor extracts an activity log message from the parameters. The Activity Log Monitor interprets the values and creates the appropriate message. This message is then sent to the database for storage. It can be verified that the data is in the archive by using isql. For each activity log message, an event message will be displayed before archiving. The event message will contain the activity log message, which is the time tag of activity log message, the activity log id, activity text, and five data words.

For the dump test, following sign on, the telemetry driver is configured to send dump data to the Dump process. The Dump process receives the dump data and writes it to a file. The file is stored and the Memory Image process is notified. The Memory Image recognizes the dump as an activity log dump, and sends the dump data to the Activity Log Monitor process. The Activity Log Monitor interprets the dump data. The Activity Log Monitor sends out an event message indicating the number of new messages and of those how many are severe. This event is displayed on the Events Display. The Activity Log Monitor sends the activity log messages to the database for storage. This update will be verified by using isql.

Success Criteria: This test is considered successful when it can be shown that it is possible to monitor housekeeping data, provide notification of SCC activity log messages, to notify the user of the number of back orbit activity log messages, and to access the archived messages via Netscape.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	Start the Data Server if it is not running. Reference Test Case SYS2000B—FOS Server Startup.	Data Server Processes are running.	
2.	Start the Real-Time Server if it is not running. Reference Test Case SYS2000B—FOS Server Startup.	Real-Time Server processes are running.	
3.	Start the User Station. Reference Test Case SYS2010B—User Station Startup and Authentication.	The User Station is running and the 'Control window' is displayed.	
4.	Invoke the Event Display by selecting *Event_Display-Global* from the 'Tools…' menu.	The Event Display window will appear on the User Station.	
5.	Connect to the real-time operational string by entering the following in the ECL directive line of the Control window: ECL>**STRING CONNECT STRING=100 CONFIG=MIRROR**	The following message will eventually appear in the Event Display window: **"***Successfully connected to string 100".*	
6.	Filter out the telemetry events from the Event Display window. Click on the 'Filter' menu. Select 'Event Type …'.	A filter window appears with each type of event available.	
7.	Select the toggle button next to 'TLM' under the 'Show' column. Select the toggle button next to 'ANL' under the 'Bold' column. Click the 'Apply' button at the bottom of the window. Click the 'Close' button at the bottom of the window.	The telemetry events are not displayed in the Events Display window. Analysis events are highlighted. The Event Filter window is closed.	

8.	Start the telemetry driver from a separate xterm. % **xterm &** From the newly created xterm, enter the following: % **cd /fosb/test/am1/bin/sun_sparc_5-5** % **FtPgPackGen**	The process will read its ODFs. Wait for the following message to appear on the screen: "The Packet Generator is ready to receive directives."	
9.	Start the test procedure CONT2020a using an ECL directive. Type the following in the ECL portion of the Control window. ECL> **START CONT2020a**	This procedure is designed to configure the FtPgPackGen process to multicast housekeeping data. The procedure is finished when the following event is displayed in the Events Display window: "Procedure Controller Finished processing procedure CONT2020a"	
10.	Start the test data flowing using an ECL directive. Enter the following in the ECL portion of the Control window. ECL> **PG STARTDATA APID=1 COUNT=10**	FtPgPackGen will multicast 10 packets to the EOC. The Activity Log Monitor receives parameters from the Parameter Server. It creates the activity log messages from the parameters. The messages are sent to the database for storage. An event is generated for each activity log message received. An alarm event is sent if the message has an alarm severity specified.	
11.	Verify the events in the Event Display are correct. Take a screen snap when the data is completed processing. Compare the events to table CONT2020a.	The events on the Events Display should match those of table CONT2020a.	

12.	Verify the contents of the database table 'fos_activity_archive' using isql. % **isql -Ufos_dba -Pfos_dba** 1> **use am1_fos_ops** 2> **go** 1> **select * from fos_activity_archive** 2> **go** 1> **exit**	The messages in the archive should match those listed in table CONT2020b.	
13.	Configure the telemetry driver to multicast dump data using procedure CONT2020b. Enter the following in the ECL portion of the Control window. ECL> **START CONT2020b**	The telemetry driver is configured to broadcast 16kb diagnostic data to the EOC. The procedure is finished when the following event is displayed in the Events Display window: "Procedure Controller Finished processing procedure CONT2020b".	
14.	From the 'Tools…' menu, select the *Command_Control.*	The Command Control initialization window appears, prompting the user for a string id and a spacecraft id.	
15.	Enter '100' for string id and 'AM1' for the spacecraft id. Click the 'OK' button at the bottom of the window.	The initialization window disappears. The Command Control window appears.	
16.	From the 'Config' menu of the Command Control window, select the 'Cmd Verification' toggle button.	Command Execution Verification is turned off.	

17.	From the ‘Config’ menu of the Command Control window, select the ‘Tlm Verification’ toggle button.	Telemetry Verification is turned off.	
18.	Enter the following directive in the CMD portion of the Command Control window: CMD: **FOP INIT NOCHECK** Click the ‘Resume’ button. Then, click the ‘Send’ button.	The following event appears in the Events Display: “Protocol info : FOP is in active state, ready to accept commands.”	
19.	Click the ‘Suspend’ button. Enter the following in the CMD portion of the window: CMD: **/FS1_DUMP_TBLINIT2 TABLE_ID=17 WORD_COUNT=130** Click the ‘Resume’ button. Then, click the ‘Send’ button.	The following event eventually appears in the Events Display: “Received notification of impending memory dump.”	
20.	Start the telemetry driver with an ECL command. Enter the following in the ECL portion of the Control window. ECL> **PG STARTDATA APID=1 COUNT=13**	The telemetry driver multicasts 12 packets of dump data. The Dump process receives the dump data and writes it to a file. The file is stored and the Memory Image process is notified. Memory Image processes the dump. Memory Image recognizes the dump as an activity log dump, and sends the dump data to the Activity Log Monitor process. The Activity Log Monitor interprets the dump data and sends out an event message. The Activity Log Monitor sends the activity log messages to the database for storage.	

21.	Verify the event message states the total number of activity log messages received in the dump data and how many of those messages are critical.	Compare the event with the information in table CONT2020c.	
22.	Verify the database table 'fos_activity_archive' is correct using isql. % **isql -Ufos_dba -Pfos_dba** 1> **use am1_fos_ops** 2> **go** 3> **select * from fos_activity_archive** 4> **go** 1> **exit**	The output should match that in table CONT2020d.	
23.	Start procedure CONT2020c from the Control window. Type the following on the ECL portion of the Control window: ECL> **START CONT2020c**	Procedure CONT2020c configures the packet generate for housekeeping data on the I channel. The procedure is finished when the following event is displayed in the Events Display window: "Procedure Controller Finished processing procedure CONT2020c"	
24.	Start the packet generator. Enter the following on the ECL portion of the Control window: ECL> **PG STARTDATA APID=1 COUNT=300**	The packet generator generates 300 packets of housekeeping data. This will create 300 activity log messages. An event is generated for each activity log message received. Each message is archived in the database table *fos_activity_archive.*	
25.	Bring up the FOS Help page. Click the left mouse button on the 'Help…' button on the Control window.	Netscape comes up with the FOS Help Index page loaded.	

26.	Select the 'Bookmarks' menu option. From the displayed bookmarks, select 'FOS Databases page'.	The page *FosDbHome* is loaded.	
27.	From the FOS Database Home page, click the left mouse button on 'Activity Archive'.	The Activity Archive Selection page is loaded.	
28.	With all of the selection fields empty, click on the 'Submit' button at the bottom of the page.	All of the Activity Log messages in the archive are displayed.	
29.	Click on the 'Back' button at the top of the browser. From the Activity Archive Selection page, fill in the Spacecraft Time start field and stop time field corresponding to the most recent 300 messages in the archive. Click on the 'Submit' button at the bottom of the screen.	The last 300 messages are displayed.	
30.	Close Netscape. From the 'File' menu option, select the 'Exit' option.	Netscape is closed.	
31.	Shut down the User Station. First disconnect from the string by typing the following in the ECL portion of the Control window: ECL> **STRING DISCONNECT STRING=100**	The following event is eventually displayed in the Events Display: "User successfully disconnected from string 100."	
32.	From the original xterm, execute the MyKill script. % **cd /fosb/test/am1/scripts/setup** % **MyKill**	The User Station is brought down.	
33.	Log off of the User Station.		

34.	End of test.		

Table 5-26. CONT2020a

PACKET	EVENT TEXT
1	SCC Activity Log Msg : 1958:251:12:00:00.000 19 This is activity log message number 19 0001 0001 0001 0001 0001
2	SCC Activity Log Msg : 1958:251:12:00:00.023 7 This is activity log message number 7 0002 0002 0002 0002 0002
3	SCC Activity Log Msg : 1958:251:12:00:00.074 22 This is activity log message number 22 0003 0003 0003 0003 0003
4	SCC Activity Log Severe Msg : 1958:251:12:00:00.124 26 This is activity log message number 26 0004 0004 0004 0004 0004
5	SCC Activity Log Severe Msg : 1958:251:12:00:00.149 4 This is activity log message number 4 0005 0005 0005 0005 0005
6	SCC Activity Log Msg : 1958:251:12:00:00.174 13 This is activity log message number 13 0006 0006 0006 0006 0006
7	SCC Activity Log Msg : 1958:251:12:00:00.201 30 This is activity log message number 30 0007 0007 0007 0007 0007
8	SCC Activity Log Msg : 1958:251:12:00:00.213 33 This is activity log message number 33 0008 0008 0008 0008 0008
9	SCC Activity Log Msg : 1958:251:12:00:00.232 20 This is activity log message number 20 0009 0009 0009 0009 0009

NOTE: The five data words at the end of the message are randomly generated. The test is successful if the time of the message and the id are correct.

Table 5-27. CONT2020b

PKTNO	MESSAGE ID	ACTIVITY LOG MESSAGE
1	19	1958:251:12:00:00.000 19 This is activity log message number 19 0001 0001 0001 0001 0001
2	7	1958:251:12:00:00.000 7 This is activity log message number 7 0002 0002 0002 0002 0002
3	22	1958:251:12:00:00.074 22 This is activity log message number 22 0003 0003 0003 0003 0003
4	26	1958:251:12:00:00.124 26 This is activity log message number 26 0004 0004 0004 0004 0004
5	4	1958:251:12:00:00.149 4 This is activity log message number 4 0005 0005 0005 0005 0005
6	13	1958:251:12:00:00.174 13 This is activity log message number 13 0006 0006 0006 0006 0006
7	30	1958:251:12:00:00.201 30 This is activity log message number 30 0007 0007 0007 0007 0007
8	33	1958:251:12:00:00.213 33 This is activity log message number 33 0008 0008 0008 0008 0008
9	20	1958:251:12:00:00.232 20 This is activity log message number 20 0009 0009 0009 0009 0009

NOTE: The five data words at the end of the message are randomly generated. The test is successful if the time of the message and the id are correct.

Table 5-28. CONT2020c

EVENT TEXT
Activity log dump processing complete with 13 new messages and 4 severe message.

Table 5-29. CONT2020d

MESSAGE ID	ACTIVITY LOG MESSAGE
8	1997:206:14:00:00.000 8 This is activity log message number 8 0000 0000 0000 0000 0000
25	1997:206:14:03:21.010 25 This is activity log message number 25 0000 0000 0000 0000 0000
11	1997:206:14:23:29.090 11 This is activity log message number 11 0000 0000 0000 0000 0000
36	1997:206:17:03:24.040 36 This is activity log message number 36 0000 0000 0000 0000 0000
31	1997:206:19:46:45.050 31 This is activity log message number 31 0000 0000 0000 0000 0000
29	1997:206:19:58:29.090 29 This is activity log message number 29 0000 0000 0000 0000 0000
14	1997:206:20:25:06.060 14 This is activity log message number 14 0000 0000 0000 0000 0000
26	1997:206:20:31:44.817 26 This is activity log message number 26 0000 0000 0000 0000 0000
19	1997:206:20:36:41.151 19 This is activity log message number 19 0000 0000 0000 0000 0000
3	1997:206:21:03:37.999 3 This is activity log message number 3 0000 0000 0000 0000 0000
2	1997:206:21:41:01.606 2 This is activity log message number 2 0000 0000 0000 0000 0000

CONT-2030B-SSR Monitoring - Blaze

Test Case No.: CONT- 2030B

Test Configuration: See Appendix G

Test Support: Telemetry Simulator, FtPgPackGen, for generating AM-1 Housekeeping telemetry packets, UPD simulator, upd and RcmClient, for simulating messages from the NCC, CODA simulator, EdosCodaDriver, for simulating CODA messages from EDOS. RT Works to display SSR Buffer Management. Resource Model, SSR Updater, Communication Contact Scheduler, Timeline, and General Scheduler for test preparation

Test Case Description: This test is designed to show that the AM-1 Solid State Recorder buffers can be monitored in real-time by the SSR manager. It is designed to show that the SSR manager can detect and handle RF failures, via UPD messages that the status of the buffers can be reported at the end of a contact. That notification will be provided when a user attempts to schedule science data collection activities that cause overflow of any of the SSR buffers. It is designed to show that the SSR manager can accept CODA message data indicating data dropout and provide recovery procedures. It is designed to show that the updated buffer status will be displayed after recovery from unrecoverable data dropout or premature loss of contact. S/C data volume will be modeled by the planning and scheduling software along with predictions of the SSR buffer status based on science collection activities. It is designed to show that the capability exists to change the buffer playback order of the instrument science data for the SSR and that the SSR manager shall provide an analysis window that contains buffer pointers, buffer status, playback state and RF failures.

Following sign-on, The system will be brought up. The AM-1 Telemetry, the UPD data and CODA messages will be started to run on the system. As the different segments of the data pass through the system, requirements will be verified by the displays and expected behavior of the system. The system will then be brought down.

Success Criteria: This test is considered successful when it can be shown that the solid state recorder AM-1 buffers can be monitored in real time, the SSR monitor can detect RF failures and report the state for such a failure. That the SSR monitor will have the capability to report the status of a buffer verified at the end of a contact. It will be considered successful when it is shown that the solid state monitor will have the capability to recommend recovery procedures to correct for playback loss and to correct for RF link faults. The test will be considered successful when it is shown that the SSR monitor can display updated buffer status after each unrecoverable data dropout or premature loss of contact. The test will be successful when it is verified that the SSR monitor will display a window that contains buffer pointers, buffer status, playback state and RF failures. Success is verified when it can be shown that the SSR monitor will display recommended playback data loss recovery procedures. The test is successful when it can be shown that the SSR monitor can access user NCC User Performance Data(UPD) and EDOS Customer Operations and Data Accounting (CODA) messages for analysis. The test will be considered successful when it is shown that the SSR monitor can change the buffer playback order of instrument science data for the SSR.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	Log in to an EOC user station, using the UNIX login procedure, by entering a valid User Name and Password: Username: **fostest2** Password: XXXXXX	The login is accepted and a blank desktop area appears.	
2.	Start the Data Server. Reference Test Case SYS2000B—FOS Server Startup	Data Server Processes are running.	
3.	Start the Real-Time Server. Reference Test Case SYS2000B—FOS Server Startup	Real-Time Server Processes are running.	
4.	Start the User Station. Reference Test Case SYS2010B—User Station Startup and Authentication.	The FOT User Station is running and the 'Control window' is displayed.	

5.	Invoke the Event Display by selecting Event Display Global from the tools menu. *(Wait for completion of Real-Time Server startup script before going to the next step.)*	The Event Display window appears on the EOC user station Real-Time Server startup script is complete when the following message appears on the Event Display: 'String 100 was created'	
6.	Connect to the default real-time operational string by entering the following in the ECL directive line of the Control window: ECL>**STRING CONNECT STRING=100 CONFIG=MIRROR** *(Wait for string connection to complete before going to the next step)*	The following event message appears within several minutes of entering the 'CONNECT' directive: 'Successfully connected to String 100'	
7.	Take groundcontrol and command control by entering the ECL directives: ECL>**TAKE COMMAND STRING=100** ECL>**TAKE GROUNDCONTROL STRING=100**		
8.	Request NCC UPD messages from the upd simulator by entering the following directive: ECL>**NCC UPD ENABLE**	The UPD driver does not send UPDs until both the Enable directive and UPD driver configuration is performed. UPD driver configuration will performed in step 23.	
9.	Open the Master Plan using FPTlTimeline.	Open the Master Plan for a whole day.	

10.	Arrange the resources displayed on the timeline in order to aid test execution. Specifically, display TDRS In-View periods, AM1 Communications resource, K-Band Downlink resource, AM1 SSR resource along with SSR buffers.		
11.	Define activity for K-band down-link. From the Activity Definer tool select <file>, <new>, enter an activity name, select appropriate resource <K-Band Downlink>, select <OK>, select <Modify> and enter 'S00' for the NCC CODE. Save the activity.	An event message will be displayed stating the new activity was successfully created.	
12.	Define an activity for AM1 Communications. From the Activity Definer tool select <file>, <new>, enter an activity name, select appropriate resource <AM1 Communications>, select <OK>, select <Modify - Complex Activity>, choose <Resource Selection> and select activity defined in step 11. Set Start and Stop Times to +15 and -15 seconds, respectively. Click <Add> and <Ok>. Select <Modify> and enter 'S00' for the NCC CODE. Save the activity.	An event message will be displayed stating the new activity was successfully created.	
13.	Define activities to place Science Instruments in Data Collection Mode. From the Activity Definer tool select <file>, <new>, enter an activity name, select appropriate resource (e.g. AM1 MODIS),	An event message will be displayed stating the new activity was successfully created.	
14.	Using the FpGsGeneralScheduler, schedule the activities from step 13, which will cause a buffer overflow. Save the Master Plan.	Make sure the activity schedules will make the SSR Buffer overflow.	

15.	Verify that the resource model recalculates the predicted buffer volumes and displays the changes on the timeline. Verify that the timeline turns color to indicate the buffer overflow condition. Use FpRmResourceModel and FpTlTimeline.	This demonstrates the ability of the software to notify the user when he attempts to schedule science data collection activities that cause overflow of any of the buffers.	
16.	Using the Communications Contact Scheduler, schedule 7 contact sessions. Save the Master Plan.		
17.	Verify that the resource model recalculates the predicted buffer volumes and displays the changes reflecting SSR Buffer Playback activities on the timeline.		
18.	Start RTworks dataserver using the ECL directive: ECL>**EA ENABLE STRING=100**	This steps starts a dataserver which provides the link for passing data between the FOS Applications and the RTworks Application.	
19.	From the FUI Environment Control window. Select Tools, select SSR Display and then select ssr_top Verify that the SSR monitor pages are displayed.		
20.	From an Xterm window run the SSRStartUp script out of scripts directory.	This starts the SSR manager.	
21.	Verify receipt of buffer predicts from PAS, SSR Updater.	This can be verified through SSR Manager's display window.	
22.	Verify the SSR Dump Command request is created and sent to the FUI command request window.	This will occur before AOS is scheduled. Currently this time is set to 30 seconds.	
23.	At AOS start the UPD simulator. See RcmClient usage instructions.	Use nominal data in TABLE CONT-2030B-2 column 1.	

24.	At AOS start sending simulated AM1 HK data using FtPgPackGen. See FtPgPackGen usage instructions.	Use mnemonics in TABLE CONT-2030B-1 column1. This nominal data with no errors.	
25.	At AOS start the CODA simulator. See EdosCodaDriver usage instructions.	Use nominal data in TABLE CONT-2030B-3 column 1.	
26.	Send the first SSR Buffer Dump Command request be clicking the 'SEND' button on the FUI Command Request Window.		
27.	Using FtPgPackGen, adjust telemetry mnemonic values to simulate the dumping of this SSR Buffer.	See FtPgPackGen usage instructions for details on how to perform this step. The mnemonic to be adjusted is TBD and should take values in the range of nn to mm. This will be determined at run-time, by examining the buffer dump requests.	
28.	View the RTworks display page.	All readings should be nominal for this case. Verify that the SSR Manager has a display that contains buffer pointers, buffer status, playback state, information about RF failures and information about recovery from data dropout.	
29.	Upon completion of the first Buffer Dump Command request, send the second request.		
30.	Using FtPgPackGen, adjust telemetry mnemonic values to simulate the dumping of this SSR Buffer.	See FtPgPackGen usage instructions for details on how to perform this step. The mnemonic to be adjusted is TBD and should take values in the range of nn to mm. This will be determined at run-time, by examining the buffer dump requests.	

31.	View the RT Works display page.	All readings should be nominal for this buffer playback. Verify that the SSR Manager has a display that contains buffer pointers, buffer status, playback state, information about RF failures and information about recovery from data dropout.	
32.	Upon completion of the second Buffer Dump Command request, send the third request.		
33.	Using FtPgPackGen, adjust telemetry mnemonic values to simulate the dumping of this SSR Buffer.	See FtPgPackGen usage instructions for details on how to perform this step. The mnemonic to be adjusted is TBD and should take values in the range of nn to mm. This will be determined at run-time, by examining the buffer dump requests.	
34.	Upon completion of the third Buffer Dump Command request, send the fourth request.		
35.	Using FtPgPackGen, adjust telemetry mnemonic values to simulate the dumping of this SSR Buffer.	See FtPgPackGen usage instructions for details on how to perform this step. The mnemonic to be adjusted is TBD and should take values in the range of nn to mm. This will be determined at run-time, by examining the buffer dump requests.	
36.	Allow to continue till LOS.		
37.	Verify upon completion of the S/C contact SSR buffer actuals are sent to PAS.	SSR Updater will compare actuals to predicts.	
38.	Verify that SSR Updater makes a correction to the SSR Buffer graphs on Timelines.	This correction will be for the amount that the predicts differed from the actuals.	

39.	Leave the system up and verify that the SSR Management tool requests the buffer predicts for the next contact session and creates the SSR Dump Command Request.	This will occur prior to the AOS of the next AOS. Currently this time is set to 5 minutes.	
40.	Bring down the FtPgPackGen and the CODA simulator.		
41.	Stop the flow of the NCC UPD messages by entering the following directive: ECL>**NCC UPD DISABLE**		
42.	Repeat steps 19 - 42 except use UPD data that indicates the RF link was broke. Use the UPD data in Table CONT-2030B-2 column 2.	The SSR monitor should indicate that there was an RF link failure and should provide a recovery procedure. The appropriate recovery procedure should be a message indicating that NCC UPD data detects a data dropout, the recommended recovery procedure is to contact the NCC to determine the cause of the problem. Fortunately, in our test case, the CODA reports indicate that the data was successfully received at EDOS.	
43.	Repeat steps 19 - 42 except use CODA data that indicates there is data dropout (small amount of missed data). Use the CODA data in TABLE CONT-2030B-3 column 2.	Case: Buffer can be replayed in the same contact session.	
44.	Repeat step 44.	Case: Buffer cannot be replayed in the same contact session, but will not cause buffer overflows before the next scheduled contact session.	

45.	Repeat step 44.	Case: Buffer cannot be replayed in the same contact session and will cause buffer overflows before the next scheduled contact session.	
46.	Change the order of SSR Buffer playbacks by editing the following file: /net/data/giraffes/RTWORKS_SSR/bufferOrder.cfg		
47.	*Repeat steps 19 - 42.*	*Look at the command requests they should be changed from the first test. Take a snap to verify this. Snap is printed at system printer. Collect for off-line analysis.*	
48.	*Go into Sybase.*		
49.	*Select <tablename>.*	*Change SSR Buffer size.*	
50.	*Update buffer size parameter.*		
51.	*Leave Sybase.*		
52.	*Go into Sybase.*		
53.	*Select <tablename>.*	*Change SSR Buffer Data Volume Limits.*	
54.	*Update buffer data volume limit parameters.*		
55.	*Leave Sybase.*		
56.	Bring down the SSR Manager.		
57.	Bring down the PAS Tools.		
58.	Bring down packGen. Press Ctrl-C.		

59.	Terminate all processes on the user station by entering the following in the CmdTool Window where the user station was initialized. %: **MyKill** *(Wait until a UNIX prompt is received before going to the next step.)*	The processes on the user station terminate.	
60.	Display the number of endpoints for the user station, by entering the following in the CmdTool Window (after the UNIX prompt is received): %: **show.sh**	The number of endpoints for the user station is 0.	

61.	If there are more than 0 endpoints for the user station, kill the outstanding processes. In the applicable CmdTool window, view the active processes by entering the following: %: **ps -aux** Terminate the applicable processes gracefully by executing the following: %: **kill -2 <processid … processid>** Note: Execute all 'kill' commands on the higher-numbered processes first. %: **show.sh** If endpoints still remain, then use unconditional termination on the applicable processes: %: **ps -aux** %: **kill -9 <processid … processid>**	There are no endpoints.	
62.	Close the CmdTool Window for the user station, by entering the following in the CmdTool Window. %: **exit**	Each CmdTool Window closes.	
63.	End of test.		

Table 5-30. CONT-2030B-1

Telemetry Mnemonics	Starting Value	Low Value	High Value	Status
CDH_NR_SSR1_LRSSSCNT	1	-	-	Static
CDH_NR_SSR1_MISSSCNT	16	-	-	Static
CDH_NR_SSR1_MODSSCNT	27	-	-	Static
CDH_NR_SSR1_ASTSSCNT	49	-	-	Static
CDH_NR_SSR1_TSHSSCNT	1	-	-	Static
CDH_NR_SSR1_SC0RECTR	0	0	516	Increasing
CDH_NR_SSR1_SC1RECTR	0	0	516	Increasing
CDH_NR_SSR1_SC2RECTR	0	0	8256	Increasing
CDH_NR_SSR1_SC3RECTR	0	0	13932	Increasing
CDH_NR_SSR1_SC4RECTR	0	0	25284	Increasing
CDH_NR_SSR1_SC0PBCTR	CDH_NR_SSR1_SC0RECTR	0	516	Decreasing
CDH_NR_SSR1_SC1PBCTR	CDH_NR_SSR1_SC1RECTR	0	516	Decreasing
CDH_NR_SSR1_SC2PBCTR	CDH_NR_SSR1_SC2RECTR	0	8256	Decreasing
CDH_NR_SSR1_SC3PBCTR	CDH_NR_SSR1_SC3RECTR	0	13932	Decreasing
CDH_NR_SSR1_SC4PBCTR	CDH_NR_SSR1_SC4RECTR	0	25284	Decreasing
CDH_BR_SSR1_SCPB	0	0	1	Toggled

Notes: The RECTR mnemonics are the recording buffers, they will increase at a slow rate throughout the SCS, but they will be reset to 0 at the beginning of the specific buffer playback. The PBCTR mnemonics are the playback buffer counters, they will be stable at 0 until the specific buffer is dumped, at which point it will take on the value of the RECTR mnemonic and begin decreasing at a moderate rate. The SCPB mnemonic is to indicate playback, 0 = off 1=ongoing, this will change values appropriately during test execution.

Table 5-31. CONT- 2030B-2

CODA Mnemonics	Starting Value	Low Value	High Value	Status
CDA_SeqCntSCS	0	0	65,535	Increasing
CDA_CntUncorVCDU1*	0	0	294,967,295	Stable
CDA_CntUncorVCDU2*	0	0	294,967,295	Stable
CDA_CntUncorVCDU3*	0	0	294,967,295	Stable
CDA_CntUncorVCDU4*	0	0	294,967,295	Stable
CDA_CntUncorVCDU5*	0	0	294,967,295	Stable
CDA_CntUncorVCDU6*	0	0	294,967,295	Stable
CDA_CntVcduSeqVcduId*	0	0	4,294,967,295	Stable
CDA_VCID111				
CDA_VCID141				
CDA_VCID142				
CDA_VCID117				
CDA_VCID118				
CDA_VCID123				
CDA_VCID130				

* An increase of one or more indicates missed data for the buffer.

Table 5-32. CONT- 2030B-3

UPD Mnemonics	Initial Value	AOS Value	LOS Value	Error Value
UPD_K2_STATUS	2	0	2	
UPD_K2_DATA_VALIDITY	0	0	0	
UPD_K2_I_LOCK	0	1	0	
UPD_K2_I_SIG	12345	12345	12345	
UPD_K2_Q_LOCK	0	1	0	
UPD_K2_Q_SIG	23456	23456	23456	
UPD_K2_I_SYN_LOCK	0	1	0	
UPD_K2_Q_SYN_LOCK	0	1	0	
UPD_K2_I_BER	0	1	0	
UPD_K2_Q_BER	0	1	0	
UPD_S1_STATUS	2	0	2	
UPD_S1_DATA_VALIDITY	0	0	0	
UPD_S1_1_RCVR	0	1	0	
UPD_S1_1_SIG	12345	12345	12345	
UPD_S1_ILOCK	0	1	0	
UPD_S1_QLOCK	0	1	0	
UPD_S1_IBER	1	1	1	
UPD_S1_QBER	1	1	1	

CONT-2040B - Spacecraft State Check

Test Case No.: CONT-2040B

Test Configuration: See Appendix G

Test Support: Telemetry packet driver sending out packets to be decommutated with values of packets 15,30,45 and 60 that will not match the first table, three tables of expected telemetry parameters from the Command Management subsystem, where the first table will only partially match the parameter stream, the second table will match the parameter stream and the third table will be filled with all zeroes and will not match the parameter stream. Parameter Server to generate a parameter stream from decommutated telemetry. A test tool from the CMS to look at the expected values in the tables in raw form. Populated ground schedules for generating expected state tables.

Test Case Description: It is designed to show that an expected state table can be generated for comparison with parameters from the parameter server. Also it is designed to verify that an event will be displayed for all mismatches between expected CMS values and parameter values from the parameter server after a comparison is made. That the system is capable of handling good telemetry. That via commands, new telemetry data can be compared with a new table copied from CMS. And finally that the system has the capability to overwrite the expected state table with telemetry data (baseline expected spacecraft values.)

Following sign-on, an events display window is brought up, the first state check expected state table is loaded, an alphanumeric display page is brought on line, the telemetry server is brought up. Following this the parameter server is started. Telemetry arrival is displayed on an alphanumeric page, event messages on the events display page occur when there are any mismatches between the expected state table and the telemetry coming in. The second expected state table is then loaded for a second set of comparisons where there will be good agreement. Also, for the second expected state table comparison telemetry will be sent on the Q channel(For the first comparison telemetry is sent on the I channel) and the explicit Load step will be omitted to see if it is performed automatically on the Evaluate Step. Here, the S/C values are then baselined by overwriting the values in the expected state table with values from the parameter server. The third expected state table is generated with all zeroes and a comparison is made with the parameters from the telemetry server.

Success Criteria: This test is considered successful when it is demonstrated that a table of expected values can be created for comparison with values for s/c telemetry, when it can be verified that expected values of specified parameters can be compared with the actual values in telemetry. That performing spacecraft checking will occur on good telemetry values. That spacecraft state checks can be performed for discrete telemetry values that can be changed via spacecraft command and that can be verified through housekeeping telemetry. It will be considered successful when the spacecraft check shall reveal any deviations between the current state and expected state. That there are differences between the expected and actual spacecraft states. It will be shown that the user has the capability to invoke spacecraft state checking. It will be demonstrated that the capability to baseline the expected spacecraft state values with current downlink telemetry will be provided. It will be considered successful when the telemetry can be run on both the I and Q channels and that the Load step will be performed automatically when the Evaluate command is given.

Step Id	Action	Expected Result/Output	Pass/ Fail
1.	Log in to an EOC user station, using UNIX login procedure, by entering a valid User Name and Password: Username: **fostest2** Password: **test2team**	The login is accepted and a blank desktop area appears.	

2.	In a CmdTool window, remotely log in to the Data Server. %: **rlogin fossws30** Password: **test2team** Change the directory to the setup scripts directory and display the number of endpoints: %: **cd /fosb/test/am1/scripts/setup** %: **show.sh**	Two sets of information appear. At the end of each set, the message '(0 rows affected)' appears, indicating there are no endpoints.	
3.	If there are more than 0 endpoints, remove them by entering the following in the Terminal window: %: **rm_all.sh**	There are no endpoints.	
4.	Invoke the Data Server startup script: %: **source DataServerStartup** *(Wait for script completion)* Display the number of endpoints for the Data Server by entering the following in a Terminal Window. %: **show.sh**	???Script is complete when the following message appears repeatedly in the Terminal window: 'Waiting for activity' The number of endpoints is 24.	

5.	If there are not 24 endpoints, then the correct or complete set of processes was not initialized. In this case, remove the endpoints by entering the following in the Terminal window: %: **rm_all.sh** Then reinitialize the Data Server as described in the preceding steps.	The Data Server initializes properly.	
6.	Bring up the EOC user station by entering the following in a new CmdTool window.(The prompt contains the user station name, e.g., fossws10, not the data server name, i.e.,fossws30.) %: **cd /fosb/test/am1/scripts/setup** %: **source UserStationStartup** *(It is not necessary to wait for completion of the user station startup script at this point.)*	During script execution, 7 Planning and scheduling windows appear.	
7.	In a new CmdTool window, remotely log in to the Real-Time Server. %: **rlogin fossws32** Password: **test2team** Change the directory to the setup scripts directory and display the number of endpoints: %: **cd /fosb/test/am1/scripts/setup** %: **show.sh**	Two sets of information appear. At the end of each set, the message '(0 rows affected)' appears, indicating there are no endpoints.	

8.	Invoke the Real-Time Server startup script: %: **source RealTimeServerStartup** *(It is not necessary to wait for completion of the Real-Time Server startup script at this point.)*	Messages on Real-Time Server startup appear in the CmdTool window.	
9.	Wait for completion of user station startup script.	User station startup is complete when the Control window appears on the EOC user station.	
10.	Invoke the Event Display by selecting Event Display Global from the tools menu. *(Wait for completion of Real-Time Server startup script before going to the next step)*	The Event Display Window appears on the EOC user station. Real-Time server startup script is complete when the following message appears on the Event Display: 'String 100 was created'	
11.	Connect to the default real-time operational string by entering the following in the ECL directive line of the Control window: ECL>**STRING CONNECT STRING=100 CONFIG=MIRROR** *(Wait for string connection to complete before going to the next step)*	The following event message appears within several minutes of entering the 'CONNECT' directive: 'Successfully connected to String 100'	

12.	Load the state check table with values from the CMS (first table) ECL>**STATE LOAD STRING=100** time=**YYYYMMHHSS** Without the time parameter the current table is loaded. With the time parameter the table closest to that time is retrieved.	For the first table use the current time.	
13.	Bring up the alphanumeric display page. ECL>**P P2040B**	This page will display the mnemonics and raw telemetry values and will allow the user to take snaps for later analysis.	

14.	Invoke the EDOS telemetry driver for the multicast of Housekeeping telemetry packets for processing. In a new terminal window enter the following: %: **cd/fosb/test/am1/scripts/setup** %: **source packGenEnvVars** %: **CD/fosb/test/am1/bin/sun_sparc_5-5** %: **packGen** Enter tlm type: **am1-hk** At the packGen prompt enter the following: IP address = **225.2.7.00** Port Number = **20101** Number of packets to send: **65** Packet delay in milliseconds: **8000**	Start packgen and verify telemetry is coming in on the display page. Make sure test monitors the telemetry for one Master Cycle before taking snaps.	
15.	Do not use any telemetry flagged as bad. Wait until the simulator is only producing good quality telemetry.		

16.	Compare telemetry stream values from parameter server with values from CMS in State Table. ECL>**State Evaluate STRING=101**	Miscompares are reported by generating an event message. Events should take place when there was a mismatch in the original data. Verify this by looking at original values of the data. Miscompares should occur at packets 15,30,45 and 60. The snaps of the values in these packets should match the values in TABLE CONT2040B-1 column 1. Use the CMS tool to look at the expected state table to verify that the values are different.	
17.	View the alphanumeric display page. Take a snap when packet 15 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	
18.	View the alphanumeric display page. Take a snap when packet 30 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	
19.	View the alphanumeric display page. Take a snap when packet 45 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	
20.	View the alphanumeric display page. Take a snap when packet 60 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	

21.	Bring packGen down. Press Ctrl-C	Will restart packGen on Q channel.	
22.	Invoke the EDOS telemetry driver for the multicast of Housekeeping telemetry packets for processing. In a new terminal window enter the following: %: **cd/fosb/test/am1/scripts/setup** %: **source packGenEnvVars** %: **CD/fos/test/am1/bin/sun_sparc_5-5** Enter tlm type: **am1-hk** At the packGen prompt enter the following: IP address = TBD Port Number = TBD Number of packets to send: 65 Packet delay in milliseconds: **8000**	Start packgen and verify telemetry is coming in on the display page. Make sure test monitors the telemetry for one Master Cycle before taking snaps. The data is coming in on the Q channel now.	
23.	Do not use any telemetry flagged as bad. Wait until the simulator is only producing good quality telemetry.		
24.	Start parameter server running on Q channel. ECL>**State Channel=Q STRING=10**		

25.	Compare second telemetry stream values from parameter server with values from CMS in the second State Table. This Command should automatically load the expected state table with values from the Ground Command Schedule and then make a comparison with telemetry parameters flowing in. ECL>**State Evaluate STRING=100**	Miscompares are reported by generating an event message. For this run there should be no mismatches.Check that the parameter data from the parameter server match the data in TABLE CONT2040B-1 column 2. Take snaps at packets for later analysis to verify this. Success of this step verifies that spacecraft state checks for discrete telemetry values can be changed via spacecraft command and can be evaluated via housekeeping telemetry. Look at the data in the expected state table with the CMS tool to verify that values in the table match the snaps taken.	
26.	View the alphanumeric display page. Take a snap when packet 15 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	
27.	View the alphanumeric display page. Take a snap when packet 30 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	
28.	View the alphanumeric display page. Take a snap when packet 45 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	

29.	View the alphanumeric display page. Take a snap when packet 60 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	
30.	Baseline the expected spacecraft state values with current downlink telemetry. ECL>**State Baseline STRING=100**	This tells the Statecheck task to replace the expected values in the state table previously received from CMS with the current values in the parameter server.	
31.	Compare values in the expected state table with values from the parameter server. ECL>**State Evaluate STRING=100**	Compare values in the expected state table with values from the parameter server by taking snaps and using the CMS tool for looking at the table. They should match. The values for the telemetry are given in TABLE CONT2040B-1 Column 2.	
32.	View the alphanumeric display page. Take a snap when packet 15 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	
33.	View the alphanumeric display page. Take a snap when packet 30 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	

34.	View the alphanumeric display page. Take a snap when packet 45 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	
35.	View the alphanumeric display page. Take a snap when packet 60 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	
36.	Load an expected state table with all zeroes from a ground schedule. ECL>**State Load STRING=100**	Verify this by using the CMS tool for looking at the expected state table.	
37.	Compare telemetry stream parameters from the parameter server with values from CMS in expected state table. Use a good set of telemetry values as was used above. ECL>**State Evaluate STRING=100**	Miscompares are reported by generating event messages. Event messages should be generated for every table value. Take snaps to verify telemetry values. Telemetry values should agree with values in TABLE CONT2040B-1, column 2.	
38.	View the alphanumeric display page. Take a snap when packet 15 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	
39.	View the alphanumeric display page. Take a snap when packet 30 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	

40.	View the alphanumeric display page. Take a snap when packet 45 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	
41.	View the alphanumeric display page. Take a snap when packet 60 is sent by entering the following inside a terminal window: %: **snap**	The snap is printed at the system printer. Collect the printout for off-line analysis.	
42.	Bring packGen down. Press Ctrl-C.		
43.	Terminate all processes on the Real-Time Server, user station, and Data Server by entering the following in each CmdTool Window where the Real-Time Server, user station, and Data Server, as applicable, was initialized. %: **MyKill** *(Wait until a UNIX prompt is received before going to the next step.)*	The processes on the Real-Time Server, user station, and Data Server terminate.	
44.	Display the number of endpoints for the Real-Time Server, user station, and Data Server by entering the following in each CmdTool Window (after the UNIX prompt is received): %: **show.sh**	The number of endpoints for the Real-Time Server, user station, and Data Server is 0.	

45.	If there are more than 0 endpoints for the Real-Time Sever, user station, or Data Server, kill the outstanding processes. In the applicable CmdTool window, view the active processes by entering the following: %: **ps -aux** Terminate the applicable processes gracefully by executing the following: %: **kill -2 <processid … processid>** Note: Execute all 'kill' commands on the higher-numbered processes first. %: **show.sh** If endpoints still remain, then use unconditional termination on the applicable processes: %: **ps -aux** %: **kill -9 <processid … processid>**	There are no endpoints.	
46.	Close the CmdTool Window for the Real-Time Server, user station, and Data Server by entering the following in each CmdTool Window. %: **exit**	Each CmdTool Window closes.	
47.	End of test.		

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